



Mpox: A Public Health Emergency of International Concern

Plus

- The model street method: its suitability in post-conflict settings
- Coping with healthcare ethical issues in Cameroon
- Onchocerciasis-associated epilepsy in South Sudan
- Teratoma-associated Anti-NMDA receptor encephalitis
- Locating a migrated IUD from the uterine cavity
- Neurocysticercosis epilepsy diagnosed by MRI

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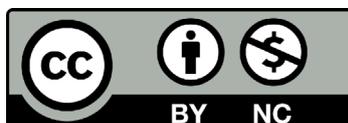
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Editorial

- Mpox is a public health emergency of international concern *Edward Eremugo Kenyi* 102

Research Articles

- The model street method: considering its suitability beyond poverty and sustainability into post-conflict settings *Shelley Grierson and Paul Mastruk* 103
- Coping with healthcare ethical issues in Cameroon *Kevin T.J. Dzi, Oscaline N. Ndong, Elisabeth Z. Menkem, and Nicholas Tendongfor* 108

Main Article

- Onchocerciasis-associated epilepsy in Western Equatoria State, South Sudan *Stephen Raimon Jada, Gasim OE Abd-Elfarag, Luís-Jorge Amaral, Amber Hadermann, and Robert Colebunders* 114

Case Reports

- A rare and challenging case of teratoma-associated Anti-NMDA receptor encephalitis *Kevan English and Dianalyn De Leon* 121
- Perioperative anaesthetic management of a patient with single ventricle undergoing mastoidectomy *Ehssan Mohamed, Mazin A. Helali, Emad A. Mohamed and Wehaj A. Mohamed*..... 126
- Radiological accuracy in locating a migrated IUD from the uterine cavity *Peter J. Wangwe* 130
- Neurocysticercosis epilepsy diagnosed by Magnetic Resonance Imaging *Ronald M. E. Woro* 135
- Phalangeal microgeodic syndrome: A case series in five adults *Lucy Parker, Moneeb Ahmad, Sandeep Mukherjee, and Paula McAlinden* 139

Short Communications

- Transforming stroke care in Africa: Early initiatives of a UK-based charity *Godwin Ogbole, Rufus Akinyemi, Joyce S Balami, Gabriele De Luca, Yaria Joseph, Adesola Adepoju, and Margaret Esiri* 139
- Annual health dialogue report in Kigile Payam, Maiwut County, Upper Nile State, South Sudan *Panom Puok Duoth Kier, Paul Gatluak Tong, and Kech Pal Gach* 143
- Letter to the Editor: ‘Eradicating helminthic infections’ *Martin L. Mikaya* 149
- Obituary: Mr Richard Hassan Kalamsakit 150

FRONT COVER IMAGE: Mpox patient with the characteristic rash on the dorsal surfaces of the hands in the Democratic Republic of Congo, 1997 (Credit: CDC Image Lab)

Mpox is a public health emergency of international concern

On August 13, 2024, the Africa Centres for Disease Control and Prevention (Africa CDC) declared the continuing Mpox outbreak in Central Africa a “Public Health Emergency of Continental Security (PHECS),” a declaration that empowered the organization to “lead and coordinate responses to significant health emergencies.”^[1]

A day later, the Director General of the World Health Organization (WHO), Dr Tedros Adhanom Ghebreyesus, also declared that the Mpox outbreak “constitutes a public health emergency of international concern (PHEIC).”^[2]

The global health bodies’ quick responses signify the urgency with which a response is needed. For Africa CDC, it was the first time the centre had made such a declaration since its foundation in 2017.

According to the Africa CDC, the Monkeypox virus has two distinct genetic types or clades: Clade I and Clade II. The symptoms of Mpox include a skin rash/ mucosal lesions, fever, headache, muscle and back pains, lethargy, and swollen lymph nodes. The virus can be transmitted to humans through physical contact with an infectious person, contaminated materials, or infected animals.^[1]

Mpox outbreaks have been a recurrent phenomenon in the Democratic Republic of Congo for decades. With the increase in cases in July 2022, WHO declared a PHEIC due to the spread of the virus to several countries in Central and East Africa. The WHO stated that the emergency was over in May 2023.^[2]

This upsurge of cases and potential spread has increased concerns in the Republic of Congo, Angola, Zambia, Rwanda, Burundi, Uganda, South Sudan, and the Central African Republic.^[3] The Ministries of Health in these countries should be on high alert. Although cross-border activities are expected to continue normally, health workers in these areas should have a high level of suspicion.

South Sudan should take all the necessary steps to stop the virus from entering the country by implementing a robust preparedness and readiness plan as soon as possible. The vital funds and other resources should support the recent steps taken by the Ministry of Health.^[4]

Recent reports of suspected cases of Mpox in South Sudan were found to be negative.

Let us hope it remains that way.

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Mpox patient with the characteristic rash on the dorsal surfaces of the hands in the Democratic Republic of Congo, 1997 (Credit: CDC Image Lab)

The model street method: considering its suitability beyond poverty and sustainability into post-conflict settings

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ABSTRACT

Introduction: The model street method was developed in 2015 to provide a framework for delivering high-impact, low-cost, scalable community health interventions for communities affected by poverty in Africa. Since then, the method has been adapted to other contexts, including sustainable redevelopment of urban areas in Europe and North America. Therefore, the suitability of the model as a template from which other contexts could benefit should be considered. Post-conflict settings have several features in common with poverty settings, where this model has been well demonstrated as effective.

Method: The method involves physically transforming a community through improved neighbourhood infrastructure and design. The aim is to improve the physical and psychological wellbeing of the residents. In its flagship project, residents of the deprived neighbourhood Dandora (Kenya) achieved a significantly improved quality of life. The project was delivered over six stages across 18 months. These stages included field research, collaboration laboratories, community workshops, building parties, implementation, and launch.

Results: Key success measures included improvements in perceived safety and security of residents, and better livelihood opportunities, relationships with authorities, play opportunities for children, and drainage and environmental quality. The results achieved recognition in several international awards. The method has since been applied to other neighbourhoods in comparable settings, such as Cape Town, Accra, and Kampala. It has also been adapted successfully to settings other than poverty alleviation, including its use in Europe and North America.

Conclusion: As a community health intervention method, it is low-cost, and its focus on collaboration maximises suitability across a variety of contexts. However, there are unique features specific to post-conflict settings, so it is recommended that the model street methods' suitability for application in post-conflict settings be further considered and investigated.

Keywords: model street method, poverty alleviation, sustainable development, community health, post-conflict wellbeing.

Introduction

In 2015, The Placemakers Netherlands Design Lab commenced a flagship project giving birth to the model street method.^[1] It brought together a variety of actors from academia, community groups, international experts, non-governmental organisations (NGOs) and the private sector, with an aim to develop a sustainable and viable solution to inclusive development and community wellbeing. The project’s focus was a community in Dandora, Nairobi, where serious social challenges were being faced as a result of fast urban growth, high levels of community poverty and unprecedented levels of exposure to pollutants from landfill.^[2] This method has since been applied successfully in several different settings, typically with a focus on poverty alleviation in developing nations, or a focus on accessibility and sustainability in developed nations.^[3] In its demonstrable application across a variety of settings, the model street method has been established as a flexible, low-cost solution for community redevelopment projects to improve wellbeing, and as a suitable framework for wider use.

In this paper, the application of the model street method is considered beyond the contexts of poverty alleviation and sustainable development settings and into post-conflict settings. In this landscape redevelopment is often required on a far larger and more complex scale in support of the recovery and establishment of improved wellbeing for affected communities. An advantage of the model street method is the lower cost compared to the costs of other forms of public investment. The International Monetary Fund quantified the average inefficiency of more commonly applied comparable investments at 30% of the overall project cost.^[4]

Method

Dandora is a low-income neighbourhood located 11km from Nairobi, with a population of 141,885. It is known as East Africa’s largest informal landfill site.^[5] As the main landfill site for the solid waste generated by the city of Nairobi, residents are exposed to the impacts of the improper dumping of solid, hazardous, and medical waste, including disease transmission from rodents and

Table 1. Summary of method stages^[7]

Stage	Description
I. Field Research	Socio-spatial research of public spaces, drafting of inventories.
II. Collaboration Laboratories	International and local experts and community-based organisations selected from field research findings. Representation selected for community.
III. Community Workshops	Shared software design session with community representatives to reimagine public spaces. 26 residents included diversity of gender, age, disability, area of neighbourhood and income.
IV. Building Parties	Community leaders and volunteers began taking action in the community
V. Implementation	Works requiring more specialised or technical support brought forward by the community representatives to project partners for broader implementation and support.
VI. Launch	Official launch on Saturday 14th April 2018.

Table 2. Key focus areas and improvements^[7]

Focus	Outcome
Access	Paving 800m of roads and paths, construction of footpaths, installation of 14 neighbourhood gates (Figures 1, 2, and 3).
Environment	Planting 25 trees (Figure 1), beautification of building facades, artistic painting, courtyards created
Inclusion	Women commissioned for flag making, youth, children, disabled and the elderly involved in design and general cleaning, youth commissioned for art work
Safety	Street lighting, gate lighting, children’s play areas, tyre swings
Sanitation	Clearance of rubbish and drains, creation of new drainage, installation of 13 rubbish bins
Opportunities	Kiosks for businesses
Ongoing	Maintenance planning, maintenance budgeting and maintenance team. Improved social cohesion and community wellbeing measures.



Figure 1. Dandora Walkway Transformation, Nairobi, Kenya (Source: Anna Wien, Project for Public Spaces, 2020)

toxic chemical exposure as well as poor sanitation, lack of access to clean drinking water, disease transmission from rodents and toxic chemical exposure.^[5]

The model street method was developed, and the transformation of Dandora was achieved, through six key stages, as outlined in Table 1. The redevelopment of the street took approximately eighteen months from start to finish. Residents now contribute 100 Kenyan Shillings per month for the ongoing maintenance of the space.

Key Features

Model street developments contain three key features: development, collaboration, and improved wellbeing. Development represented the aim and hypothesis, collaboration was the method through which it was achieved, and improved community wellbeing measures represented the desired result. Redevelopment of a space is always the most visible outcome of each transformation, but outcomes are also key statistics relating to the physical improvements made to a space. Community collaboration and action was critical to ensuring that each development was designed in accordance with the needs of the residents, and that project acceptability was maximised. Wellbeing outcomes were optimised through this involvement and shared responsibility and measured through short-, mid- and longer-term assessments of the community.

Partnerships and funding were also integral to the

success of the project. Initial funding of \$2,000 USD was provided by The International New Town Institute and International Federation for Housing. Other costs (workshops, design, equipment hire, building party costs, public events, maintenance, and project documentation and planning) totalled \$118,558 USD.^[7]

Results

Beyond landfill proximity, Dandora was also affected by high levels of crime, unemployment, youth gang activity, gender inequality, lack of access to education and the effects of the neighbourhood's poor reputation on its residents.^[6] Key focuses and desired outcomes for residents were prioritised, as outlined in Table 2. The initiative succeeded in addressing and improving issues such as crime rate, criminal youth gangs, youth unemployment, urban decay, waste management and poor living environment.^[7]

Key focus areas and improvements made to the neighbourhood were distilled down into five themes reported by residents to have resulted in tangible benefit to them. These were: improved perceived



Figure 2. Dandora Street Before Paving (Source: Anna Wien, Project for Public Spaces, 2020).



Figure 3. Dandora Children Skating (Source: Anna Wien, Project for Public Spaces, 2020).

safety and security, improved livelihood opportunities, improved relationships with authorities, improved play opportunities for children and improved drainage and environmental quality.^[8] Improved relationships between youth, residents and authorities have resulted in collaborations on reclaiming new areas of public space.^[8] The drainage lines that were cleared, opened and installed have had a significant contribution to the environmental health of the neighbourhood.^[8] Overflowing sewers, flash floods and mud were a constant risk to health and vector of disease.^[8]

As a result of the success of this first model street project in 2015, there have been several projects replicated in comparable settings, with similar positive results. These have included 'Open Streets' in Cape Town, Khayelitsha Slum Upgrade in Cape Town, Mmofra Place in Accra and Street Angels Slum Upgrading in Kampala.^[3] Model street initiatives have also been applied with great success in more developed settings, including the Noordwal project in The Netherlands and the 45th Avenue project in New York City.^[9] These focused on addressing traffic, pollution and the improvement of green and more biodiverse public spaces. Local and low-cost community health interventions have also been shown to be of particular value to children, by providing safer, more active, journeys to school, introducing play spaces, tackling air pollution, improving waste management, driving youth participation, promoting improved early childcare environments, advocating urban gardening and reducing malnutrition.

Post-Conflict Context

Another setting to consider is post-conflict zones, where redevelopment is often required at scale. In such settings, whole communities require support to re-establish wellbeing, and budgets and resources are incredibly limited. Post-World War II redevelopment demonstrated that thoughtful planning assists faster recovery from trauma for communities from the wider impacts of war.^[10] Today, according to The Geneva Academy (2023), there are currently 114 active global conflicts including in the Middle East and North Africa (45 active conflicts), Africa (35 active conflicts), Asia (21 active conflicts), Europe (7 active conflicts) and Latin America (6 active conflicts).^[11]

Post-conflict settings are those in which prolonged conflict and active warfare has come to an end, yet tensions and long-term insecurities still exist.^[12] Redevelopment of communities in active conflicts is often impossible due to ongoing risks to safety. Redevelopment in post-conflict

zones however, share many of the same challenges as redevelopment in areas of poverty, such as environmental hazards, safety and security risks, lack of infrastructure, poor sanitation, lack of economic opportunity, poor food production and drinking water access, and poor facilities for children. Like model street redevelopments, post-conflict redevelopments typically focus on four key elements:^[13] security; justice and law enforcement; social and economic wellbeing; and governance and participation.

There are unique challenges to consider specific to post-conflict zones. These include, but are not limited to, the risk to life and health because of escalating tensions or environmental hazards (nuclear, toxins, landmines etc), the specific physical and psychological needs of residents after active warfare (injuries, disabilities, trauma, a return to non-violence, prioritisation of safety and security etc), and the impacts of displacement and poor access to channels of communication for the democratic decision making of communities.

Funding challenges are inevitable in post-conflict settings, but so too in the context of poverty alleviation. The post-conflict context may offer an opportunity to access greater funding as the result of international awareness, support, and charity. Similarly, environmental impacts such as a lack of access to food production space, access to clean drinking water, sanitation, exposure to pollutants and loss of biodiversity common to post-conflict settings are also commonplace in settings of poverty, such as Dandora. The potential for negative impacts because of community redevelopment interventions must also be considered. A risk in post-conflict redevelopment settings is the potential for intergroup conflict, or conflict between communities, as a result of perceived inequality, discrimination, or favouritism.^[14]

Discussion

The model street method has been demonstrated to be successful in its aim of improving the quality of life and wellbeing of residents in its originally trialled setting of Dandora. Since then, its application has been further applied in similar settings of poverty, and achieving similar success, in Cape Town, Accra and Kampala. Further, the model has been adapted to settings in developed nations for the purpose of sustainable redevelopment of urban space, and improving green space access. As a community health intervention, the model street method offers a relatively low cost, yet high impact opportunity. As the method prioritises collaboration in its community-led

approach, the adoption of its output is more likely and more adaptable to a variety of settings. One such setting in need of a scalable, structured solution to community health promotion is that of post-conflict zones. These are areas where active warfare has ceased, allowing the investment back into redevelopment, and where communities need support and assistance on a large and complex scale. The model has the potential to improve livelihood opportunities, relationships with authorities, play opportunities for children, environmental quality and recovery from trauma for communities in post-conflict settings in both the short- and long- term. Care must be taken however to ensure that harmful, unintended consequences such as perceived discrimination or favouritism of individuals or communities, are avoided or minimised.

Conclusion

Model street methods have several features in common. They are community-led; improve wellbeing (mental health, physical health and social cohesion); enhance environments; safety and security; and improve space functionality. The impacts of this are far reaching for the benefit of current and future generations. It is the recommendation of this paper that the model street method is considered within this specific context, as an opportunity for future research in this space.

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Coping with healthcare ethical issues in Cameroon

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ABSTRACT

Introduction: Most healthcare professionals (HCPs) face numerous ethical challenges while performing their tasks, regardless of clinical ethics support structures (CESS) in many health facilities. There has been little research on CESS in Africa. This study sought to determine how often Cameroonian HCPs in the Southwest Region (SWR) faced ethical issues, how many health institutions have CESS and whether those with no CESS are willing to have one created.

Method: From December 2022 to June 2023, a cross-sectional study of 469 nurses and physicians working in the SWR was conducted. Descriptive statistics and the chi-squared test were used. The threshold for statistical significance was $p < 0.05$.

Results: Of the 466 respondents who answered the question about encountering ethical issues, 177 said they encountered them once a month, whereas 217 reported encountering them weekly. Of the 464 responses to the questions about the CESS, 172 (37.1%) agreed that there was one in their health facility. Where there was no CESS, 255 out of 292 respondents (87.3%) expressed their willingness for one to be established.

Conclusions: SWR nurses and physicians regularly face ethical issues, and they are willing that CESS be established in their hospitals to assist them in resolving complex ethical problems. The Ministry of Public Health is requested to support such initiatives.

Key words: clinical ethics support structures, ethical dilemmas, healthcare workers, Southwest Region Cameroon.

Introduction

Ethical issues arise daily as healthcare professionals (HCPs) carry out their clinical duties. While physicians, nurses and midwives encounter ethical dilemmas regularly, health administrators and hospital porters may also encounter ethical issues when engaged in patient matters.^[1] Concerns about privacy, autonomy, truth-telling, surrogate decision-making, fairness, no maleficence, beneficence,

and informed consent are common contributing factors to ethical issues in healthcare settings.^[1] We present two hypothetical cases below to illustrate how ethical issues may present in clinical settings.

Case 1

Mike, 40 years old, is a rural hospital physician in Northwest Cameroon who serves as the sole doctor for a community of approximately 15,000 people. Martha, 80 years, was taken to Mike's hospital by her relatives after complaining of extreme pain in her lower abdomen. Mike quickly examines Martha, performs ultrasonography, and reveals that she requires an urgent appendectomy. Martha is advised that she should undergo surgery, but she bluntly refuses. Martha's relatives are notified of her condition and refusal to undergo surgery. Both Mike's and Martha's relatives try to persuade Martha to accept, but she stays adamantly resistant.

Case 2

Miranda works as a hospital porter in a hospital in the Cameroonian city of Douala. Miranda has been tasked with transferring a fragile 28-year-old patient to the ward. Following a consultation with the patient, the physician requested her admittance to the ward. The physician provides the patient's medical records to Miranda and instructs her to present it to the ward's chief nurse when she arrives. While transferring the patient, the records fall from the file, and when she picks them up, she realizes that the patient has HIV/AIDS. Two days later, Miranda and one of her coworkers walked by the patient and one of her relatives, who were seated outside. Miranda notified her colleague immediately following their passing that the patient has HIV.

Miranda's disclosure of confidential patient information to a colleague, who is not directly involved in the patient's treatment, presents an ethical issue as it is imperative to maintain confidentiality. Like Miranda, sometimes HCPs may carry out acts that are unethical while interacting with patients, for example, a midwife could insult a pregnant woman if she doesn't push strongly during labour, a member of the medical team could make jokes about a patient's body type while operating on them, or a nursing assistant could decide to take a bribe and prioritise patients who come later when sending them to see a doctor. All these represent unethical practices that occur quite frequently in hospital settings that need to be addressed. The simple solution here is for the HCPs to refrain from such unethical practices. HCPs must treat patients with compassion, respect, and dignity. They must also refrain from exchanging medical information with

those not directly involved in the patient's care.

Now, let us consider Mike's situation: while he must save Martha as HCP, Martha is not willing to undergo surgery. This raises an ethical dilemma, with the situation being more complex than in the previous case. Mike must not base his decision solely on Martha's medical condition, although the standard practice is to manage patients' illnesses to facilitate their recovery. He should additionally consider the patient's best interests as well as any relevant contextual circumstances, such as beliefs, that may be influencing the patient's decision.

Knowledge of clinical ethics could aid HCPs such as Mike in concluding what to do when they encounter such ethical dilemmas. Clinical ethics is a practical and structured approach for assisting HCPs in recognizing, examining, and resolving such ethical issues that emerge in clinical settings.^[2] While some hospitals have clinical ethics support structures (CESS) that could assist HCPs in resolving complex ethical issues, others do not. HCPs in hospitals without CESS must rely on their intuition or collaborate with their supervisors and/or colleagues to come up with a resolution when such ethical cases arise.

How to address such issues with the available structures is critical for every health institution. Resolutions are difficult when responsibilities are unclear.^[3] CESS exist in most hospitals in advanced nations in the form of clinical ethics committees.^[4]

Other types of CESS includes moral case deliberations (MCDs) and individual clinical ethics consultants.^[5] A MCD involves a skilled facilitator with professionals, including expert ethics consultants, patients, and families, providing a discussion forum for ethical dilemmas.^[6,7]

Research on CESS in Africa is very sparse. In Cameroon, ethics committees such as the National Ethics Committee and Institutional Review Boards (IRBs) focus on training HCPs and other scholars on informed consent and other topics related to conducting studies involving human subjects^[8] with minimal attention to clinical ethics or CESS. No research has been conducted in Cameroon to assess the processes used by HCPs to address clinical ethical issues.

The purpose of our study was to identify the methods by which Cameroonian HCPs handle ethical challenges and whether the training they received helped them resolve the issues they faced. Additionally, we aimed to determine whether HCPs were willing to accept the creation of CESS within their hospitals.

Method

A cross-sectional questionnaire study using convenience sampling was conducted among physicians and nurses practicing in the southwest region (SWR) of Cameroon (an English-speaking region with a population of approximately 1.2 million).^[9]

All physicians and nurses who were actively engaged in healthcare practice within the SWR and had been practicing for at least a year were considered eligible for participation.

We modified questionnaires employed in studies on medical ethics in developing countries.^[10-13] The final instrument contained six sections. We considered the fifth and sixth sections of the questionnaire (a full version is available upon request). Between December 2022 and June 2023, the surveys were handed to hospital administrators, who then placed them at a designated area in the hospital for their staff members to collect, complete, and return at their convenience. Then weekly follow-up visits were conducted to collect the completed questionnaires. The overall completion rate was 32.5% (469/1491).

The data were entered into a Microsoft Excel 2013 spreadsheet and cleaned. Descriptive analyses were performed on the entire dataset. Using the chi-squared test or Fisher's exact test, a comparison of responses on frequency of ethical problems encountered and the type of health facility was carried out. A p-value <0.05 was considered to indicate statistical significance. The data were analysed using SPSS version 27 software.

Ethical considerations

This study was approved by the Regional Delegation of Public Health, SWR, and the institutional review board of the Faculty of Health Sciences, University of Buea. Written informed consent was obtained from all participants, and no personally identifiable information was collected.

Results

Baseline characteristics

Of 469 participants, nurses accounted for 89.8% (79.6% female), while 10.2% (60.4% male) were physicians. Most respondents were within the 30–39-year age group. Two hundred and fifty-six (54.6%) participants were affiliated to public health facilities (HFs), while 82 (17.5%) were based in Faith HFs (Table 1).

Table 1. Demographic characteristics of study participants

	Physicians n (%)	Nurses n (%)	Total n (%)
Gender			
Female	19 (39.6)	335 (79.6)	354 (75.5)
Male	29 (60.4)	81 (19.2)	110 (23.6)
Did not specify their gender	-	5 (1.2)	5 (1.1)
Type of health facility			
Faith-based	7 (14.6)	75 (17.8)	82 (17.5)
Private	10 (20.8)	121 (28.7)	131 (27.9)
Public	31 (64.6)	125 (53.4)	256 (54.6)
Age group (years)			
20 – 29	18 (37.5)	132 (31.4)	150 (32.0)
30 – 39	25 (52.1)	200 (47.5)	225 (48.0)
40 – 49	4 (8.3)	69 (16.4)	73 (15.6)
50 +	1 (2.1)	20 (4.8)	21 (4.4)
Time in service (years)			
1 – 5	32 (66.7)	216 (51.3)	248 (52.9)
6 – 10	11 (22.9)	125 (29.7)	136 (29)
11 +	5 (10.4)	80 (19)	85 (18.1)
Religion			
Christian	45 (93.8)	407(96.7)	452 (96.4)
Muslim	1 (2.1)	9 (2.1)	10 (2.1)
Pagan	2 (4.2)	5 (1.2)	7 (1.5)
Total	48 (10.2)	421 (89.8)	469 (100)

Medical ethics training

Four hundred and forty-nine (95.7%) of 496 respondents participated in medical ethics courses. More physicians compared to nurses (43.8% vs 30.9%) received over 10-hour training sessions. Overall, most HCPs (40.5%) received 1-5 hours of training (Table 2). Two-thirds of the respondents said the training was adequate. Nurses reported significantly greater satisfaction with the training than physicians (71% vs. 43.2%, p<0.01).

Furthermore, over two-thirds of all the respondents confirmed that the training helped them identify and cope with ethical issues. More nurses than physicians significantly agreed (78.6% vs. 66.7%, p = 0.02) with this question.

Table 2. Training on medical ethics

	How many hours of medical ethics training was included in your curriculum? (n=469)				Do you think that the teaching of medical ethics in the medical/ nursing school was adequate? (n= 444)			Do you think the training you received makes you identify and cope with ethical issues now? (n=447)			Do you think that you need more training of medical ethics? (n=447)		
	1-5	6-10	> 10	None	Yes	No	Don't know	Yes	No	Don't know	Yes	No	Don't know
Physicians	14 (29.2)	12 (25.0)	21 (43.8)	1 (2.1)	19 (43.2)	22 (50.0)	3 (6.8)	30 (66.7)	14 (31.1)	1 (2.2)	40 (88.9)	3 (6.7)	2 (4.4)
Nurses	176 (41.8)	96 (22.8)	130 (30.9)	19 (4.5)	284 (71.0)	79 (19.8)	37 (9.3)	316 (78.6)	62 (15.4)	24 (6.0)	338 (83.8)	38 (9.4)	27 (6.7)
Total	190 (40.5)	108 (23.0)	151 (32.2)	20 (4.3)	303 (68.2)	101 (22.7)	40 (9.0)	346 (77.4)	76 (17.0)	25 (5.6)	377 (84.4)	41 (9.2)	29 (6.5)

Table 3. Frequency of ethical issues

	How often do you experience an ethical issue in your practice? (N=466)					How often do you find an answer to your question on the ethical issue? (N=448)					
	Frequently (once every week)	Occasional (once every month)	Rarely (once every year)	Never	p-value	Frequently (> 75% of the time)	Often (50% to 75%)	Occasional (25% to 50% of the time)	Rarely (<25% of the time)	Never	p-value
Profession											
Physicians	25 (52.1)	18 (37.5)	5 (10.4)	-	0.76	11 (22.9)	16 (33.3)	13 (27.1)	8 (16.7)	-	0.39
Nurses	192 (51.9)	159 (38.0)	55 (13.2)	12 (2.9)		85 (21.3)	91 (22.8)	141 (35.3)	79 (19.8)	4 (1.0)	
Type of facility											
Public	110 (43.3)	95 (37.4)	41 (16.1)	8 (3.1)	0.02	40 (16.5)	65 (26.7)	82 (33.7)	55 (22.6)	1 (0.4)	<0.01
Faith-based	46 (56.1)	25 (30.5)	11 (13.4)	-		31 (38.3)	13 (16.0)	27 (33.3)	9 (11.1)	1 (1.2)	
Private	61 (46.9)	57 (43.8)	8 (6.2)	4 (3.1)		25 (20.2)	29 (23.4)	45 (36.3)	23 (18.5)	2 (1.6)	
Total	217 (46.6)	177 (38.0)	60 (12.9)	12 (2.6)		96 (21.4)	107 (23.9)	154 (34.4)	154 (34.4)	4 (0.9)	

*Never responses excluded from p-value calculation

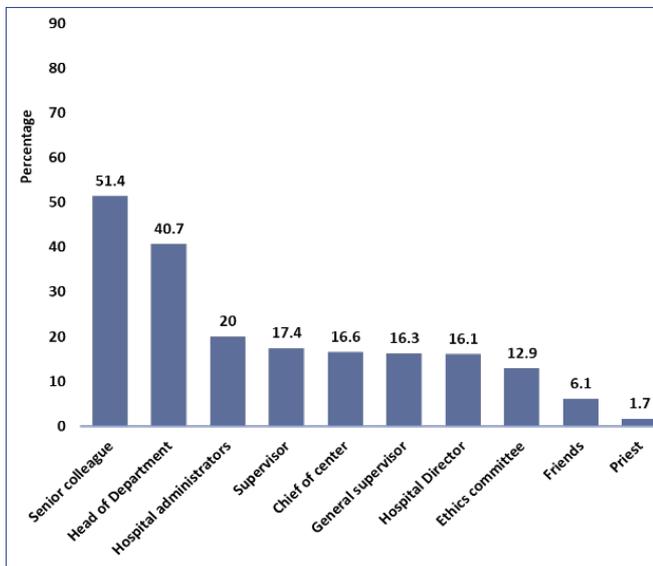


Figure 1. Consultation preference of HCPs when faced with ethical problems.

Ethical issues

Almost half (46.6%) of the HCPs experienced ethical issues weekly and about 177 (38%) monthly (Table 3). Significant differences were found between the type of health facilities (public vs faith-based) encountering ethical issues ($p = 0.02$).

Senior colleagues (51.4%) were the mostly consulted by the HCPs when faced with ethical issues, then department heads (40.7%). Only 12.9% of the HCPs approached ethics committee (Figure 1).

Clinical ethics support structures (CESS)

The existence of a CESS in their hospital was reported by 172 (37.1%) respondents; 235 (50.6%) did not have, and 57 (12.3%) did not know. Among those with CESS, 91 (52.9%) were from public HFs, 36 (20.9%) were from faith-based HFs, and 45 (26.2%) from private HFs. Of respondents with CESS, 116 (72.0%) were satisfied with the role of the committee, while 45 (28.0%) were not. Respondents from the faith-based HFs were the most satisfied with their ethics committee. While those without CESS, 87.3% were willing for CESS establishment. Of those willing, all physicians and most nurses responded positively.

Discussion

Medical ethics training

A working knowledge of medical ethics would help HCPs manage ethical dilemmas. Our study revealed that nearly all HCPs had received some medical ethics training, and most medical training institutions in the SWRs offered ethics courses. The fact that more than 80% of HCPs seek further training in medical ethics highlights the necessity for ethics training, given that most receive fewer than ten teaching hours.

Clinical ethics support structures (CESS)

The finding that many HCPs experience ethical issues very frequently and some were unable to answer their ethical dilemmas indicates the necessity for the establishment of more CESS in health facilities in the SWRs.

The fact that only a third agreed that a CESS existed in their institution is not surprising and reflects a similar situation in most parts of Africa and other underdeveloped nations.^[14] Among those with CESS, two-thirds of the respondents were satisfied with it. However, in a qualitative study carried out at the Uganda Cancer Institute, most participants thought informal mechanisms for debating clinical ethical issues lacked expertise and advised that clinical ethics committees be created.^[15]

The observation that a large percentage of HCPs whose hospital had a CESS expressed satisfaction with the role indicates that the establishment of a CESS throughout the SWR may be well received.

This study is the first to document the prevalence of ethical issues encountered by HCPs in the SWRs of Cameroon, as well as their management challenges. Our study's limitations include the inability to capture in depth our participants' thoughts and feelings and further explore responses; social desirability bias; and the study's limited geographic scope, making it difficult to generalise results. Notwithstanding these constraints, the findings of this study should aid public health authorities across Cameroon in implementing actions targeted at establishing CESS.

Conclusion

This study demonstrates that HCPs in Cameroon's SWR regularly face ethical issues, and they need clinical ethics structures to be put in place to address ethical problems.

Conflict of interest: Nil

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Onchocerciasis-associated epilepsy in Western Equatoria State, South Sudan

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ABSTRACT

Onchocerciasis-associated epilepsy (OAE) is a neglected public health problem in remote African regions endemic to onchocerciasis with sub-optimal elimination programmes. OAE manifests in previously healthy children aged 3-18 years in the absence of any obvious cause for epilepsy and is marked by a diverse range of seizure types, including head nodding seizures (nodding syndrome). This paper reviews recent studies investigating the association between onchocerciasis and epilepsy in South Sudan. Surveys in Maridi, Mundri West, and Mvolo Counties demonstrated a very high prevalence (3-6%) and incidence of epilepsy, as well as substantial onchocerciasis serological prevalence (12-34%) in young children. However, a longitudinal population-based study conducted in Maridi and Mvolo showed that strengthening onchocerciasis elimination programmes was followed by a significant and consistent reduction in the incidence of epilepsy. Despite this progress, a large epilepsy treatment gap and a high level of misconceptions about epilepsy and epilepsy-related stigma were observed. Treating epilepsy in onchocerciasis-endemic regions is challenging. More advocacy is needed to provide uninterrupted access to free anti-seizure medication and promote community awareness programmes for improving the lives of persons with epilepsy and their families in these impoverished areas.

Keywords: epilepsy, nodding syndrome, onchocerciasis, ivermectin, treatment, vector control

Introduction

The association between onchocerciasis and epilepsy was first observed by Casis-Sacre in Chiapas and Oaxaca, Mexico, in 1938.^[1] During the last two decades, various epidemiological studies have shown this association to be responsible for an important disease burden in remote onchocerciasis-endemic foci in sub-Saharan Africa.^[2] A meta-analysis of eight population-based studies before 2008 found a significant association between onchocerciasis prevalence and epilepsy with an average epilepsy prevalence increase of 0.4% for every 10% increase in onchocerciasis prevalence.^[3,4] Furthermore, results from two cohort studies in Cameroon showed a temporal and microfilarial dose-dependent association

between the level of *Onchocerca volvulus* (OV) infection in early childhood and the development of epilepsy later in life.^[4,5] While case-control studies largely corroborated the association,^[6-9] some, because of sub-optimal study design and methodological problems, were unable to confirm the association.^[10,11] This paper explores the burden of onchocerciasis-associated epilepsy (OAE) in South Sudan and the potential for reducing it through improved onchocerciasis control programmes.

Onchocerciasis-associated epilepsy clinical characteristics

Onchocerciasis-associated epilepsy is a debilitating neurological condition primarily affecting children. In areas where OV transmission remains high, many persons with epilepsy (PWE) meet the OAE criteria.^[12] These criteria include seizures appearing in previously healthy children aged 3-18 years who reside in a meso- or hyperendemic regions for onchocerciasis, with no other obvious causes for epilepsy.^[12,13] OAE exhibits a wide spectrum of convulsive and non-convulsive seizure types, such as head-nodding seizures (nodding syndrome, NS) and Nakalanga syndrome, which is characterised by stunting, delayed sexual development, cognitive impairment, facial dysmorphism and epilepsy.^[14] Both NS and Nakalanga syndrome are debilitating forms of OAE.^[15] Different forms of epilepsy often coexist within one family.^[16]

OAE case definition

A simple OAE case definition has been proposed to estimate the OAE-related burden of disease.^[12,17,18] This definition has proven valuable in identifying epilepsy hotspots where onchocerciasis elimination programmes were working sub-optimally.^[19] However, this definition is not intended for individual clinical decision-making. An important criterion of the definition is the exclusion of other obvious causes of epilepsy through a detailed medical history and clinical examination.^[12,18] Unfortunately, the absence of neuroimaging, particularly to rule out neurocysticercosis caused by *Taenia solium*, is a limitation of the OAE case definition. However, in the specific context of Western Equatoria State of South Sudan, where pig rearing is uncommon, neurocysticercosis is unlikely to be a substantial cause of epilepsy.^[20]

Onchocerciasis in South Sudan

Onchocerciasis was first reported in Sudan as early as 1908,^[21] with a case identified in Maridi County, Western

Equatoria State. South Sudan is among the highly endemic countries for onchocerciasis in Africa, with the disease endemic in half of the country.^[22] The most affected foci are Western Equatoria, Northern and Western Bahr El Ghazal States, and part of the Central Equatoria State.^[23] In 2006, around 4.1 million people in South Sudan were considered at risk of onchocerciasis.^[22] By 2008, some villages in Western Equatoria, Northern and Western Bahr El Ghazal States had alarming prevalence rates, with over 80% of individuals having palpable onchocerciasis nodules and an overall onchocerciasis prevalence exceeding 12%.^[22] As of 2022, estimates suggest over 9 million South Sudanese live in areas requiring community-directed treatment with ivermectin (CDTI).^[24] Routine CDTI programmes started in Western Equatoria State in the mid-1990s. However, these programmes faced low coverage and interruptions due to insecurity, resulting in treatment coverage as low as 40.8% in 2017.^[20]

Burden of OAE in Western Equatoria State

Already in 1946 it was reported that certain persons with onchocerciasis also presented with epilepsy.^[25] In the 1990s, the first cases of NS were recognised,^[7] and the WHO subsequently estimated its prevalence to be 4.6% in Western Equatoria in 2001-2002.^[7] A preliminary household assessment conducted in Mvolo town in 2013 revealed that a considerable proportion of children, approximately one in six, were affected by epilepsy.^[26] Since 2017, several population-based epilepsy prevalence studies have been conducted in different counties of Western Equatoria State. These studies documented a very high prevalence of epilepsy, including NS, a high prevalence of blindness and a high Ov16 seroprevalence among 3-to-9-year-old children, indicating ongoing and substantial OV transmission in the region (Table 1). This high burden of disease is explained by the high level of ongoing OV transmission and the low therapeutic CDTI coverage observed at all study sites.

In May 2018, a house-to house survey in selected villages in Maridi revealed an overall prevalence of epilepsy of 4.4 %, ranging from 3.5% to 11.9%, with the highest prevalence observed in Kazana 2, an area close to the Maridi Dam, the blackfly (*Simulium*) breeding site in the area.^[20] Blackflies are the transmission vector of OV. In 2021, despite biannual CDTI, only 56.6% of the population took ivermectin, below the 80% threshold for onchocerciasis elimination.^[29]

In 2023, a high number of persons with epilepsy were found to attend the epilepsy clinic of Maridi

Table 1. Population epilepsy prevalence and Ov16 rapid diagnostic test (RDT) seroprevalence among 3-to-9-year-old children observed during house-to-house surveys in onchocerciasis-endemic areas with ongoing *Onchocerca volvulus* transmission.

Study site	Epilepsy prevalence n/N (%)	PWE meeting OAE criteria n/N (%)	Blindness n/N (%)	Ov16 prevalence in 3–9-year-old children n/N (%)
Maridi, 2018 ^[20]	774/17,652 (4.4%)	414/486 (85.2%)		35/144 (24.3%)[27] 12/24 (50%)*[27]
Mundri East and West, 2021 ^[28]	85/2588 (3.3%)	65/80 (81.3%)	70/2588 (2.7%)	19/74 (25.7%)** 4/150 (2.7%***)
Mvolo, 2020 ^[16]	798/15,699 (5.1%)	566/709+ (78.4%)	445/15,755 (28.2%)	41/150 (27.3%)

n – number; *N* – total; + OAE – onchocerciasis-associated epilepsy; * Kazana 2 close to the Maridi Dam ** Amadi, *** Mundri Centre

hospital. Therefore, as Ibba County is also located in an onchocerciasis-endemic area, a research team of Amref Health Africa visited Ibba in June 2023 and conducted an Ov16 RDT seroprevalence survey among 3–9-year-old children in three villages, Atodigi, Dakiti and Yangu. However, none of the 100 children tested Ov16 RDT positive, suggesting a low level of OV transmission. Therefore, it was hypothesized that OAE would not be a public health problem in Ibba County. Nevertheless, an epilepsy clinic was established at Ibba hospital to reduce travelling distance that persons with epilepsy would otherwise have to make to Maridi to obtain anti-seizure medication (ASM).

A survey in 2021 in Mundri East and West County revealed an epilepsy prevalence of 3.3% with NS affecting 0.9% of the population.^[28] The highest epilepsy prevalence was observed in Hai Gabat in Amadi (4.3%) where the Ov16 RDT seroprevalence among children also suggested high OV transmission.^[28] A very high prevalence of OAE (13.7%) was also observed in Diko.^[30] CDTI coverage in Mundri East and West County was only 47.4% and in Amadi, only 35% of 5–9-year-old children eligible for ivermectin took ivermectin in 2021.^[28]

Mvolo County has a long history of high OV transmission. In 1948, entomologist DJ Lewis described in Mvolo an extremely intense blackfly biting with high OV infection rates of blackflies (up to 10% OV larvae in the heads of the blackflies).^[31] A 2020 house-to-house study in Mvolo revealed the highest prevalence of epilepsy (5.2%), including NS (2.2%) among the three counties.^[16] Mvolo also had a high Ov16 seroprevalence among 3-to-9-year-old children, suggesting ongoing and substantial OV transmission. CDTI therapeutic coverage in Mvolo reached 64.0% in 2019 but decreased to 24.1%

in 2021 following a CDTI interruption in 2020 due to COVID-19.^[32]

Onchocerciasis-associated epilepsy is preventable

OAE is a preventable condition through the enhancement of onchocerciasis elimination measures. In Maridi, annual CDTI followed by bi-annual CDTI combined with a community vector control intervention involving the removal of vegetation around blackfly breeding sites (“Slash and Clear”) significantly reduced the incidence of OAE including NS.^[29] Similarly, in Mvolo, where only annual CDTI was implemented, a population-based longitudinal study showed that the incidence of epilepsy also decreased^[32] (Table 2). Comparable results were obtained in other onchocerciasis-endemic regions. In northern and western Uganda, the incidence of epilepsy, including NS, decreased after the implementation of biannual CDTI and ground larviciding of rivers in the North, as well as after the interruption of OV transmission in western Uganda.^[33,34] Similarly, in Tanzania, biannual CDTI with high coverage resulted in a reduction in the incidence of epilepsy, including NS.^[35] Also, in the Imo River Basin in Nigeria, two decades of CDTI were followed by a significant decline in the prevalence of epilepsy.^[36]

Epilepsy treatment challenges

A substantial epilepsy treatment gap has been observed in all sub-Saharan African countries.^[37] Delays in epilepsy diagnosis and initiation of ASM contribute to intellectual and mental decline, adversely affecting individuals with epilepsy. The absence of ASM in healthcare facilities, coupled with the high costs associated with obtaining

Table 2. Studies demonstrating that the implementation and strengthening of onchocerciasis elimination programmes are followed by a reduction in the incidence of epilepsy in onchocerciasis-endemic regions of South Sudan.

Study site	Methodology		Pre-intervention		Post-intervention	
	Intervention	Survey periods	Epilepsy cases per 100,000 p-y (95% CI)	NS cases per 100,000 p-y (95% CI)	Epilepsy cases per 100,000 p-y (95% CI)	NS cases per 100,000 p-y (95% CI)
Maridi, South Sudan ^[29]	Bi-annual CDTI with sub-optimal coverage + “Slash & Clear” vector control	Pre: 2018 Post: 2022	348.8 (307.2–395.8)	154.7 (127.6–187.3)	41.7 (22.6–75.0)	10.4 (2.7–33.2)
Mvolo, South Sudan ^[32]	Annual CDTI with sub-optimal coverage	Pre: 2013–2015 Post: 2019–2021	326.5 (266.8–399.1)	151.7 (112.7–203.4)	96.6 (65.5–141.7)	27.0 (12.5–55.5)

p-y=person-years

these medications from private clinics, forces families with a person with epilepsy to allocate a significant part of their limited monthly income to procure ASM, often resulting in irregular or inadequate dosages. These irregularities contribute to poor seizure control, leading to an increased incidence of seizure-related incidents, such as burns and injuries.

In May 2018, in Maridi, only 378 (51.4%) of the 735 diagnosed PWE were taking ASM.^[13] Thanks to an epilepsy treatment programme established in May 2020 at Maridi County Hospital by Amref Health Africa in partnership with Doctors with Africa CUAMM, 1,556 persons with epilepsy received free ASM between May 2020 and July 2023. This programme significantly increased ASM intake by PWE in the central Maridi area by 39.7% (95% CI 35.3–44.2%) from 2018 to 2022.^[29] It is important that this programme is further decentralised and established in other areas in South Sudan with a high prevalence of epilepsy.

Epilepsy misconceptions and epilepsy-related stigma

Epilepsy, beyond the physical challenges, is often accompanied by stigma and discrimination due to misconceptions about the condition. In 2019, focus group discussions in Maridi with community leaders and PWE and their families revealed many misconceptions about the cause and treatment of epilepsy.^[38] Most people, for example, believed epilepsy is caused by bad spirits and is contagious through saliva, air and contact with PWE. The

fact that onchocerciasis-endemic areas often have several children with epilepsy in one family strengthens the belief that families are “cursed.” Very few participants were aware of the link between onchocerciasis and epilepsy.

These misconceptions translate into social stigma and practical challenges for PWE. Restricted daily activities and limited school attendance are common. Many children with epilepsy do not attend or drop out of school. They may be moved to separate rooms or huts when they develop seizures, forced to use different utensils, and not allowed to play with other children for fear of transmitting the condition. Families of PWE also experience stigmatisation, social exclusion and financial constraints due to the high cost of epilepsy care.^[39] Stigma can further limit opportunities for PWE, with denial for adults and educational barriers for children, often resulting in low levels of schooling.^[40] Suboptimal seizure control not only amplifies the financial burden but also intensifies stigmatisation, fostering social isolation and depriving PWE of employment opportunities. This underscores the pressing need for concerted efforts in addressing epilepsy comprehensively, including tackling misconceptions and promoting social inclusion.

Conclusion

Robust epidemiological evidence suggests that a significant fraction of epilepsy in onchocerciasis-endemic areas with high past or ongoing OV transmission is OAE. This highlights the urgent need to strengthen onchocerciasis elimination strategies in South Sudan. Increasing CDTI

therapeutic coverage and scaling up vector control interventions, such as “slash and clear”, may prevent children from developing OAE. Effective collaboration between onchocerciasis elimination and mental health programmes, for example through joint training and resource allocation, is key to addressing the OAE public health problem.

An epilepsy awareness programme could be implemented to reduce epilepsy misconceptions and stigmatization of the condition. Seizure control through regular treatment with appropriate ASM can significantly improve the quality of life for PWE and contribute to reducing stigma and increasing schooling of children with epilepsy. Additionally, advocacy at national and international levels is needed to provide uninterrupted free access to ASM for PWE to facilitate their educational development and integration into society. See <https://youtu.be/-bPTC41NBbE>

Ethical Considerations: Ethical approval for all studies conducted in South Sudan was obtained from the ethics review board of the Ministry of Health Republic of South Sudan and from the Ethics Committee of the University of Antwerp.

Conflict of interest: None

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Authors contributions: Stephen Raimon Jada and Gasim OE Abd-Elfarag coordinated the field epidemiological studies, Luís-Jorge Amaral analysed the data of the longitudinal population-based studies, Amber Hadermann was involved in the OV16 RTD seroprevalence study, Robert Colebunders was involved in study design, scientific supervision, provided funding and wrote a first draft. All authors reviewed and edited the paper. All approved the final manuscript.

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A rare and challenging case of teratoma-associated Anti-NMDA receptor encephalitis

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ABSTRACT

Anti-N-methyl-D-aspartate receptor (NMDAR) encephalitis is an autoimmune disease that is often underdiagnosed due to the variability and complexity of its clinical presentation and is frequently misdiagnosed as viral encephalitis. It is sometimes characterized as a form of limbic encephalitis, which predominantly affects children and younger adults, with a female-to-male ratio of 4:1. The neurological disease is commonly associated with an underlying tumour. Its pathophysiology is attributed to the formation and binding of IgG1 and G3 antibodies to the NR1 subunit of the NMDA receptor in the central nervous system. We present the case of a 23-year-old woman with a one-year history of episodic mood lability and psychosis who sought medical attention at the emergency department due to the sudden onset of agitation, hallucinations, and altered mental status. Brain magnetic resonance imaging revealed findings suggesting possible encephalitis. A cerebrospinal fluid analysis was positive for NMDAR antibodies, and a transvaginal ultrasound later revealed a right ovarian mass, from which a biopsy confirmed a mature cystic teratoma. Despite surgical resection of the tumour and medical treatment, the patient experienced persistent cognitive impairment and gait dysfunction following three months of hospitalization in the neuroscience intensive care unit. In light of the complexity and aggressiveness of the clinical symptoms of NMDAR encephalitis, the disease has a relatively good prognosis, especially following surgical resection of the associated malignancy and medical treatment in most patients. On the other hand, a delay in diagnosis and treatment may result in long-term functional deficits and poorer clinical outcomes.

Keywords: Encephalitis, teratoma, hippocampal, anti-NMDAR, neurology

Introduction

Anti-N-methyl-D-aspartate receptor (NMDAR) encephalitis is a rare neurological disorder with an estimated incidence of only 1.5 cases per million persons.^[1] However, despite the rarity, it is a treatable condition if identified and diagnosed early.^[2] The pathophysiology is mediated by autoantibodies targeting the NMDA receptors in the central nervous system (CNS), causing synaptic disconnection.^[2] It is the most common form of non-viral encephalitis and primarily affects children and young adults.^[3]

Up to 45% of cases are associated with teratomas, which have been identified as a trigger of NMDAR encephalitis that can induce antibody production through molecular mimicry.^[4] Symptoms are often confused with schizophrenia, substance-induced psychosis, and other psychiatric disorders.^[2-4] The clinical presentation includes an initial viral-like prodrome followed by a range of symptoms from severe anxiety to psychosis, seizures, and autonomic dysfunction.^[4,5]

This clinical picture is often complicated by cardiac arrhythmias, hyperthermia, respiratory distress, and altered mental status, necessitating intubation and admission to the neuroscience intensive care unit (NSICU).^[6] Early surgical excision of the associated culprit tumour for patients with teratomas results in better clinical outcomes and fewer relapses.^[7] A delay in diagnosis and treatment may lead to severe clinical outcomes and potentially death, with an estimated mortality rate ranging between 5 and 7%.^[8] Physicians should maintain a high index of clinical suspicion in young female patients with symptoms resembling acute and aggressive psychiatric manifestations.

Here, we present the case of a 23-year-old female with a history of acute-on-chronic aggression and paranoia who was found to have teratoma-associated NMDAR encephalitis. This condition was complicated by neurocognitive and physical deficits after hospital recovery.

Case Report

A 23-year-old woman with a one-year history of episodic mood swings and psychosis presented to the emergency department (ED) with a sudden onset of aggression, auditory hallucinations, and confusion lasting for one hour. According to her friend, the patient was at the airport for a flight when she noticed an abrupt change in mental status and behaviour. Over the past year, she had been complaining of episodic fever and nausea before a sudden change in conduct. Since the onset of her symptoms, the patient has been under the care of a psychiatrist who diagnosed schizophrenia and was being treated with risperidone (2 mg/day).

Upon presentation to the ED, she was involuntarily placed in a psychiatric unit due to her aggression and delirium. The patient was febrile (100.6 °F) without focal neurological deficits or meningeal signs. A Montreal Cognitive Assessment score was 11 out of 30. All other vital parameters were within normal limits. Physical examination was deferred due to the patient's agitation and noncompliance. Laboratory test results revealed

Table 1. CSF Findings

	Value	Normal range
Total protein	38.3 mg/dL	15-45 mg/dL
Glucose	55 mg/dL	40-70 mg/dL
Appearance	Colourless	Colourless
Opening pressure	17 cm H2O	0-20 cm H2O
WBCs	1/mm ³	0-5/mm ³
RBCs	Nil	Nil
Monocyte	9 %	0-30 %
Lymphocyte	99%	28-96%
IgG	3.4 mg/dL	0-6 mg/dL
VDRL	Negative	Negative
Cryptococcal antigen	Negative	Negative
Oligoclonal band	Negative	Negative
Oligoclonal band number	0	0-1
Albumin index	3.5	0-9
IgG index	0.59	<0.7
IgG/albumin ratio	0.19	<0.28
NMDA IgG antibody titre	1:50	<1:1
Meningitis/encephalitis PCR panel	Negative	Negative

CSF, cerebrospinal fluid; WBCs, white blood cells; RBCs, red blood cells; IgG, immunoglobulin G; VDRL, venereal disease research laboratory; PCR, polymerase chain reaction

hypokalaemia (3.2 mEq/L), neutrophilia (78.6%), and a normal white cell count (10,500 WBCs/ μ L). All other values were within the reference range. During a random visit to the patient in the psychiatric hold unit, a non-responsive client was seen exhibiting lip-smacking and foaming by the mouth. A presumptive diagnosis of seizure was made, and the patient was administered lorazepam 4 mg intravenously. Upon witnessing the apparent seizure, a neurologist was consulted. The patient was subsequently intubated and admitted to the NSICU for further management.

Given the clinical presentation, a seizure protocol was implemented. A non-contrast computed tomography (CT) scan of the brain was unremarkable. Subsequent brain magnetic resonance imaging (MRI) showed



Figure 1. Axial brain MRI showing hyperintense T2-FLAIR signal within the bilateral hippocampi (white arrows), left greater than right.

bilateral hippocampal hyperintensities in attenuated fluid inversion recovery (T2-FLAIR) weighted sequence (Figure 1), and empiric intravenous (IV) acyclovir was started. Due to clinical suspicion of encephalitis, a transvaginal ultrasound was performed later and revealed a mass in the right ovary (Figure 2). Pathological results from a biopsy of the mass confirmed a mature cystic teratoma. An electroencephalogram (EEG) demonstrated extreme delta brush activity, and cerebrospinal fluid analysis (Table 1) from a lumbar puncture showed lymphocytic pleocytosis with normal glucose and protein levels. An autoimmune/paraneoplastic antibody panel revealed a positive anti-NR1 antibody consistent with a diagnosis of NMDAR encephalitis, prompting the cessation of acyclovir therapy.

The patient underwent surgical removal of the right ovarian mass via salpingo-oophorectomy and subsequently started medical treatment with IV methylprednisolone, IV immunoglobulin, rituximab infusions, and five sessions of plasmapheresis. Her NSICU course was then complicated by worsening neurological status, including ten episodes of clinical seizures requiring lacosamide 200 mg twice daily and levetiracetam 2 grams every 12 hours. The

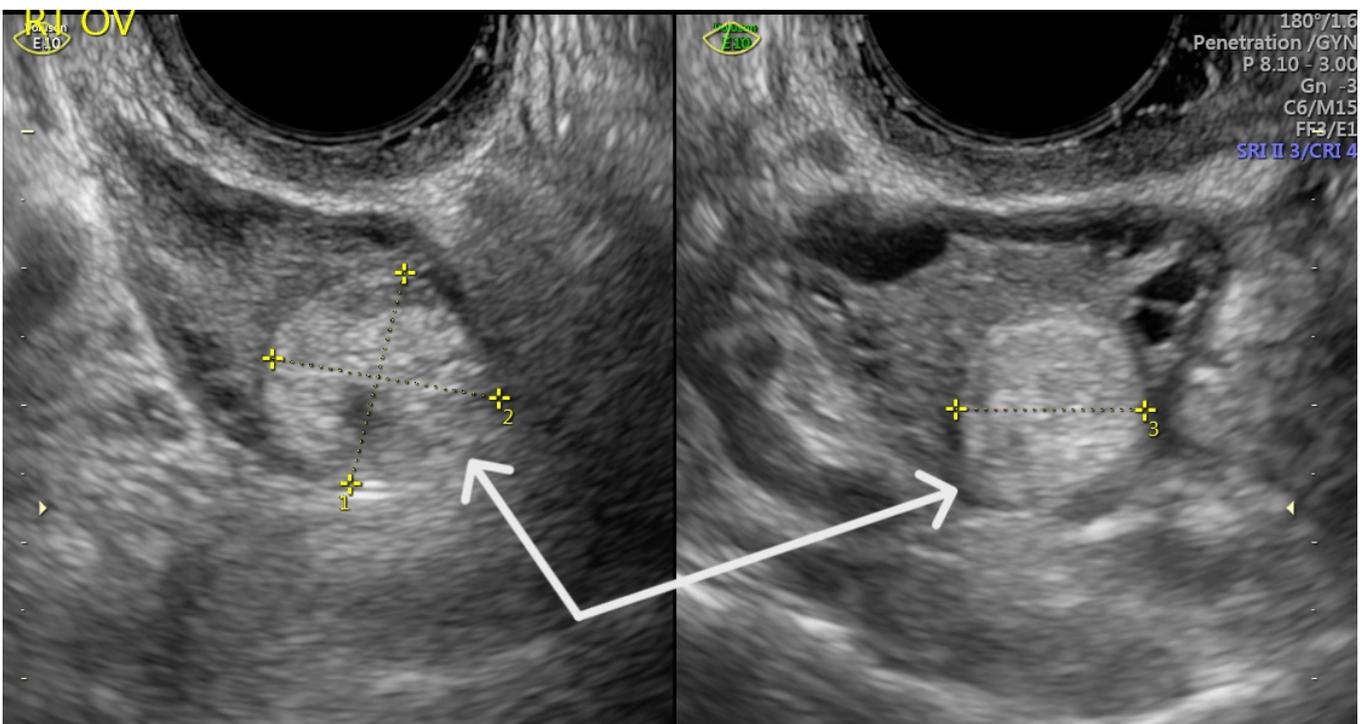


Figure 2. Transvaginal ultrasound showing a right ovarian echogenic complex mass (white arrows) that measures 1.7 x 1.6 x 1.3 cm.

patient exhibited paroxysmal sympathetic hyperactivity that required scheduled lorazepam, quetiapine, and baclofen. She also developed respiratory failure needing ventilator support through a tracheostomy and orofacial dyskinesia, which was confirmed to be non-epileptic during paralytic EEG trials. The accumulation of events in the NSICU necessitated an extended stay. After three months, the patient showed clinical improvement, and a neurology consultation was requested for continued inpatient care. Three days after the consultation for the management of mild alterations in mental status, the patient was discharged with a multidisciplinary approach to care, which required regular two-week follow-ups at the neurology clinic and physical therapy.

At the two-week follow-up, she reported self-observed residual deficits, including difficulty concentrating on everyday tasks, poor memory, increased fatigue, generalized weakness, and difficulty with ambulation. A Mini-Mental State Examination (MMSE)^[9] was subsequently performed, yielding a result of 21/30, indicative of mild cognitive impairment (MCI). The patient continued to follow up at our clinic and at the two-year interval since her diagnosis, the patient continued to experience cognitive impairment (MMSE = 23/30), along with fatigability, gait dysfunction, and poor memory. These persistent symptoms have resulted in a decreased quality of life, difficulties in academic and occupational achievements, and social withdrawal.

Discussion

NMDAR encephalitis, although rare, is the most common form of autoimmune encephalitis.^[5,7-9] It is characterized by a cluster of neurological symptoms with a positive antibody in the CSF that can lead to debilitating long-term consequences if not diagnosed and treated early.^[7-10] Although commonly associated with ovarian teratomas, NMDAR encephalitis has also been reported in patients without paraneoplastic association.^[11] Differential diagnosis for the disease includes schizophrenia, viral encephalitis, serotonin syndrome, systemic lupus erythematosus cerebritis, toxic ingestion, hashitoxicosis, and other forms of limbic encephalitis.^[12] Despite the possibility of the many diagnostic overlaps, the autoimmune encephalitis, with reasonable clinical suspicion, is easily diagnosed and differentiated from the others by detecting NMDAR autoantibodies in the serum or CSF.^[10-12]

The autoimmune encephalitis can result in long-term sequelae, including neurocognitive deficits that may lead

to psychosocial dysfunction.^[10] Early diagnosis and prompt management are crucial in preventing the development of these inadequacies and may improve clinical outcomes, especially in patients with associated teratoma.^[13]

In a recent case study, which reported the clinical outcomes of seizures, cognitive impairment, and relapses as measured by the Modified Rankin Scale (mRS) in three patients with a delay in the diagnosis of NMDAR encephalitis, it was found that the patient diagnosed 13 months after the initial symptoms showed no relapses, seizure activity, or cognitive impairment after hospitalization (mRS = 0).^[14,15] The patient with the longest delay in diagnosis, eight years after the initial symptoms, exhibited focal seizures and MCI post-hospitalization (mRS = 1). In contrast, the patient with the shortest delay in diagnosis showed a better clinical prognosis. Another study conducted in Western China demonstrated favourable long-term functional outcomes and fewer relapses in patients who received timely immunotherapy and prompt diagnosis.^[16]

In our case, the patient was misdiagnosed with schizophrenia, which ultimately delayed the correct diagnosis for a year. After a complex hospital course lasting 12.5 weeks, with frequent neurology clinic visits and physical therapy, the patient reported increased fatigue as well as difficulties with walking, memory, and concentration that have persisted for two years. Her father also reported the patient's inability to perform well in school and at work. The accumulation of these deficits has led to social withdrawal and a low quality of life.

In cases of teratoma-associated anti-NMDAR encephalitis, treatment, especially after surgical removal of the tumour, usually leads to a favourable prognosis.^[7,13] Therefore, early recognition is crucial for the best long-term outcomes and the recovery of these patients after hospitalization. We recommend that low-income countries such as South Sudan consider investing in more diagnostic tools, including CT scans and MRIs, to avoid traveling abroad for this and more common diagnoses to be made. These investments can shorten the time needed to treat such complex and other diseases and improve the overall prognosis of patients with early diagnosis.

Conclusion

NMDAR encephalitis remains underdiagnosed despite the growing body of literature. This phenomenon occurs due to low clinician suspicion and the complexity of the disease presentation. As a consequence of delayed diagnosis and management, patients may experience undesirable

functional deficits and poorer clinical outcomes compared to those who receive prompt treatment. Therefore, we recommend screening all younger patients, especially females, for anti-NMDAR encephalitis if they present with neuropsychiatric symptoms.

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Images: All from the hospital system

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Perioperative anaesthetic management of a patient with single ventricle undergoing mastoidectomy

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ABSTRACT

Patients with single ventricles undergoing non-cardiac surgery have a higher incidence of perioperative complications. Factors associated with the most significant risk are the complexity of cardiac disease and the patient's physiological status. We here describe the anaesthetic management and pathophysiological considerations of an 18-year-old male with a single ventricle undergoing elective mastoidectomy. Comprehensive and multidisciplinary perioperative care is mandatory for optimal management. The patient had a history of previous cardiac surgeries for his cardiac condition and presented for elective mastoidectomy due to chronic suppurative otitis media. Preoperative assessment revealed a satisfactory general condition with peripheral oxygen saturation (Spo₂) of 90-92% on room air. Cardiovascular evaluation showed weak S1 and S2 heart sounds and a faint systolic murmur heard best at the left upper sternal border. Echocardiography indicated a common ventricle with a small left atrium and significant tricuspid regurgitation. Long term medications included carbamazepine, warfarin, and aspirin. Comprehensive perioperative care, including meticulous preoperative assessment, tailored intraoperative management, and appropriate postoperative monitoring is crucial for patients with single ventricles undergoing non-cardiac surgery. Specialized centres equipped to manage high-risk cases are recommended to optimize outcomes and minimize complications.

Keywords: anaesthesia, cardiac anaesthesia, congenital heart diseases, single ventricle

Introduction

Among all congenital heart defects, the incidence of hypoplastic left heart syndrome (HLHS) is 3.8% and accounts for 23% of mortality within the first week of life.^[1,2] It is characterized by varying degrees of hypoplastic left ventricle accompanied by a single right ventricle and different valvular abnormalities involving either aortic stenosis or aortic atresia and severe mitral stenosis or mitral atresia.^[3]

HLHS impairs normal circulation physiology, mixing pulmonary and systemic blood in the typical single right ventricle, which directly communicates with the pulmonary circulation and the systemic circulation through the patent ductus

arteriosus (PDA). The PDA must be maintained after birth with an infusion of prostaglandin E1 to maintain systemic circulation perfusion until surgical interventions are planned.^[4] Maintaining a balance between pulmonary and systemic blood flow provides the optimal state to maintain adequate perfusion of both the lungs and body perfusion.

Case Report

An 18-year-old male who is known to have a single ventricle heart underwent two heart surgeries in which a ventricular repair and reconstruction were done, including repair of the aortic arch and pulmonary artery bandage at three months of age and Fontan operation at age five years. He had two months history of recurrent focal convulsions secondary to his ear disease as stated by his neurologist and on treatment with carbamazepine.

In his current admission for elective surgery, the patient presented with three years history of complaints consistent with chronic suppurative otitis media (CSOM) not responding to medical treatment and was planned for elective mastoidectomy.

The preoperative assessment was thorough, with input from the cardiology team and adherence to the 2022 European Society of Cardiology guidelines for assessing cardiovascular health in patients with congenital heart disease undergoing non-cardiac procedures. It identified an intermediate risk profile. Of particular concern was right heart function, notably tricuspid regurgitation, a significant risk factor for single ventricle patients undergoing non-cardiac surgery. Additionally, findings indicated a dilated right ventricle and atrium, suggesting a pulmonary artery pressure of 30.^[9, 10]

On clinical examination a satisfactory general condition was noticed, with peripheral pulse oximetry saturation (Spo2) of 90-92% on room air. Respiratory rate 18/min, breathing pattern, and bilateral breath sounds were normal.

Heart sounds S1 and S2 were weak with a faint systolic murmur heard at the left upper sternal border. Echocardiography showed satisfactory aortic flow, a common ventricle with a small left atrium, and a dilated dominant right atrium, resulting in significant tricuspid regurgitation. A pulmonary artery band was noted in situ with a pulmonary pressure of 30 mmHg; the estimated ventricular ejection fraction was 60%.

The patient's long-term medications were carbamazepine

200mg twice daily for control of seizures, in addition to aspirin 75mg and warfarin 3mg started earlier by his cardiology team. Warfarin had been replaced with low molecular weight heparin 5 days preoperatively.

Routine investigations were performed in addition to the renal profile, liver profile, bleeding profile, viral screening, and CXR. All results were within normal ranges. International Normalised Ratio (INR) of 1.5 and haemoglobin of 15.4g/dl.

Intraoperative anaesthetic management

The objectives of intraoperative management are to maintain cardiac contractility, balancing systemic and pulmonary vascular resistance, preventing dysrhythmias, and optimizing oxygen saturation. Intravenous ceftriaxone 2gm as prophylaxis for infective endocarditis was given one hour before the operation. The case was scheduled early in the morning as first case on the list. The patient was connected to standard monitoring in the form of an ECG, pulse oximeter, non-invasive blood pressure monitoring, and capnography. The optimal target was set close to his baseline reading with a mean arterial pressure of 80-100mmHg. Spo2 not less than 92%, and a pulse rate of 80-100/minute. Induction was achieved with 100micrograms of fentanyl, 80mg of 2% intravenous lidocaine, 5mg midazolam, 4mg dexamethasone, 1g paracetamol, and inhalational anaesthetic sevoflurane via mask ventilation.

Muscle relaxation was done using 40mg atracurium, a non-depolarising muscle relaxant followed by endotracheal tube placement. Maintenance of anaesthesia was achieved by using sevoflurane 0.8%, fluid therapy was restricted to a total intraoperative fluid volume of 350mls. Nitrous oxide was avoided in all stages of anaesthesia. Three litres per minute of oxygen and 5 litres of air were used throughout the operation and titrated to achieve a target Spo2.

The recovery phase was managed with extubation during deep sedation to reduce the risk of sympathetic overstimulation. The medications given were 2.5 mg neostigmine, 30 mg of 2% intravenous lidocaine, and 0.5 mg atropine. The total time of surgery was one and half hours.

Postoperatively, the patient was taken to the Intensive Care Unit for monitoring and transferred to the ward after 24 hours.

Discussion

Single ventricle patients have survived to older ages

recently due to advancements in cardiac surgery, so cases do present occasionally for various non-cardiac procedures under general anaesthesia. Many studies have shown a higher rate of intra-operative and early postoperative adverse events.^[4]

Assessment for perioperative risk of complications and adverse events is essential in determining the level of care required and the need for referral to specialized centres.

Many studies have identified factors associated with increased risk of complications in patients with single ventricles. The high-risk factors linked with complications are cardiac disease complexity, current physiological status, type of planned non-cardiac surgery, and age.^[7] As a result, single ventricle patients undergoing major surgery with predominant features such as decompensating heart failure, dysrhythmias, or pulmonary hypertension are at high risk of complications. Well-equipped specialized centres are required to manage elective cases.^[8]

Patients with single ventricles differ in clinical condition, severity, type of reconstructive surgery performed, and associated anomalies. As such, no one absolute anaesthetic technique or medication has been established as the best option. However, we used sevoflurane which has rapid recovery and a minimal or no effect on heart rate in induction as a desirable option. Fentanyl was the opioid agent used. However, a shorter agent such as alfentanil would be superior when available.

Optimal intraoperative and postoperative pain management is a crucial factor that must be considered. Opioids and patient-controlled analgesia for major operations have been used as a primary intervention in major surgeries.^[5]

Recommendations

Specialized Care: Patients with single ventricles undergoing major surgery should be managed in well-equipped specialized centres with expertise in cardiac anaesthesia and intensive care.

Multidisciplinary Approach: A multidisciplinary team involving anaesthesiologists, cardiologists, cardiac surgeons, and other specialists to develop and implement comprehensive perioperative care plans tailored to the individual patient's needs.

Preoperative Evaluation: Thorough preoperative assessment, including detailed cardiac evaluation, optimization of medical therapy, and identification of potential risk factors, are essential for risk stratification

and optimal perioperative management.

Intraoperative Management: Anaesthetic techniques should focus on maintaining haemodynamic stability, optimizing oxygenation, and minimizing stress responses. Careful monitoring and titration of anaesthetic agents, fluid management, and ventilation strategies are key components.

Postoperative Care: Close postoperative monitoring in a critical care setting is essential to detect and promptly manage any complications. Adequate pain management and early mobilization strategies should be implemented to facilitate recovery and reduce the risk of postoperative complications.

Long-term Follow-up: Patients with single ventricles require long-term follow-up to monitor for late complications, assess cardiac function, and optimize medical management. Collaboration between cardiology specialists and primary care providers is essential for ensuring continuity of care and optimizing long-term outcomes.

Conclusion

The successful management of patients with single ventricles undergoing non-cardiac surgery relies on comprehensive perioperative strategies tailored to individual patient needs. Specialized centres with expertise in cardiac anaesthesia and intensive care play a pivotal role in optimizing outcomes and minimizing complications.

Moreover, ongoing research and collaboration among multidisciplinary teams are crucial for advancing the field and improving patient care. By staying updated on the latest advancements in anaesthetic techniques, perioperative monitoring, and surgical interventions, healthcare providers can continue to enhance the quality of care for this complex patient population.

Authors' contributions

MAH: Conceptualization, Writing – Review and Editing, Project administration. EM: Supervision, Conceptualization, Validation. EAM and WAM: Resources, Writing - Review and Editing.

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A new Water Supply System in Torit

Torit, South Sudan – 22 July 2024 – Today marks a significant milestone for the residents of Torit, Eastern Equatoria State, as the German Embassy in South Sudan and UNICEF South Sudan handed over the newly rehabilitated and expanded water supply system to their South Sudanese partners

The upgraded supply system in Torit includes two boreholes equipped with solar-powered submersible pumps, a 25-kilometre pipeline distribution network, and an additional 500 cubic meter storage, increasing the total storage capacity by 50%. The project has also added 25 new water kiosks to the existing eight ones which will reach more people and shorten distance to water collection points. See link.

<https://www.unicef.org/southsudan/press-releases/germany-and-unicef-inaugurate-new-water-supply-system-torit>

Radiological accuracy in locating a migrated IUD from the uterine cavity

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ABSTRACT

The Intra Uterine Device (IUD) is a safe and common form of contraception. Locating a lost IUD following silent perforation of the uterus either during or after IUD insertion is challenging. Locating the IUD using radiological investigation is straightforward. However, the use of a series of radiological investigations which brings the same management outcome is controversial in terms of cost. This is a report of a rare case in which several radiological investigations were conducted following IUD migration from the uterine cavity. The patient presented with lower abdominal pain and dyspareunia for one-year post IUD insertion. Plain pelvic X-ray has less diagnostic accuracy in locating a migrated IUD compared to pelvic ultrasound and pelvic Computer Tomography (CT). Although it is cheap and can be done in low resource areas where there is minimal health investment it should be used as a preliminary investigation in case pelvic ultrasound is not available. This case report shows the important role of different imaging modalities, depending on cost, infrastructure, availability of radiological expertise, and the timely availability of endoscopic services, in diagnosing and managing a displaced IUD compared to open surgery.

Keywords: diagnostic accuracy, migrated intrauterine devices, Tanzania.

Introduction

Intrauterine devices (IUDs) are the most widely used form of long-acting reversible contraception because of their effectiveness, safety, and low cost. In Tanzania the most used modern methods of family planning among women are implants (14%), and injectable (9%). IUD is not among the commonly used method.^[1] Counselling during family planning service delivery is the key intervention in case there is a complication, and this is very well covered in Tanzania. Among the most common IUD-reported complications are uterine infection, expulsions, removal, and discontinuation of the use of an IUD as a method of choice.^[2,3] IUDs warrant close follow-up and immediate intervention when indicated.^[4] Post-insertion review is needed, and emphasis should be to encourage all clinicians to advise clients concerning follow-up where speculum examination and appropriate radiological investigations are done.^[5]

There is controversy about which diagnostic method should be ordered first in cases

where there is a suspected lost IUD after gynaecological examination and the thread is not visualized. This case report highlights the accuracy in diagnosis of a lost IUD and gives an insight into which radiological investigation should be ordered based on cost effectiveness and accuracy of diagnosis.

Case Report

A 45-year-old female, para 4+0, presented in the gynaecology clinic with complaints of lower abdominal pain and dyspareunia for one-year post IUD insertion. The interval from the time of a laparotomy (myomectomy) due to uterine fibroid to the time of delivery of the third baby was about two years. She visited her Obstetrician about one year ago when an IUD was inserted three months post vaginal delivery. She reported that she had had a previous IUD device inserted four weeks postpartum, which was removed due to malposition.

She visited the same health facility with the above complaint. On gynaecological examination the IUD string was not identified. A pelvic ultrasound scan revealed an IUD approximately 2.5cm away from the fundus of the uterus to the right side and part of it to the peritoneum (Figure 1). Transvaginal ultrasound examination did not visualize the IUD. A plain abdominal pelvic X-ray (Figure 2) demonstrated an IUD projecting into the pelvic region in an inverted T shape, thereby confirming that it had not been expelled. Confirmatory evaluation with Computed Tomography (CT) (Figure 3) reported the displaced IUD in the right myometrium extending into the peritoneum.

Physical examination and blood chemistry were normal. The patient underwent a hysteroscopic examination for IUD removal. This was unsuccessful with no IUD found in the uterine cavity. She was counselled for laparotomy and total abdominal hysterectomy (TAH) based on the previous myomectomy and the currently lost IUD. However, the patient still wanted more children. Therefore, she was appropriately counselled in case a TAH became necessary during surgery. Laparotomy was done and an IUD was identified in the right fallopian tube with the string in the peritoneal cavity and the inverted T shape imbedded in the parametrium (Figure 4). right fallopian tube and ovary were healthy (Figure 4) as was the left fallopian tube and adnexae. The IUD was removed by blunt dissection. There was no sign of infection. TAH was not performed. Recovery from surgery was uneventful. The patient opted for an alternative method of contraception other than IUD.

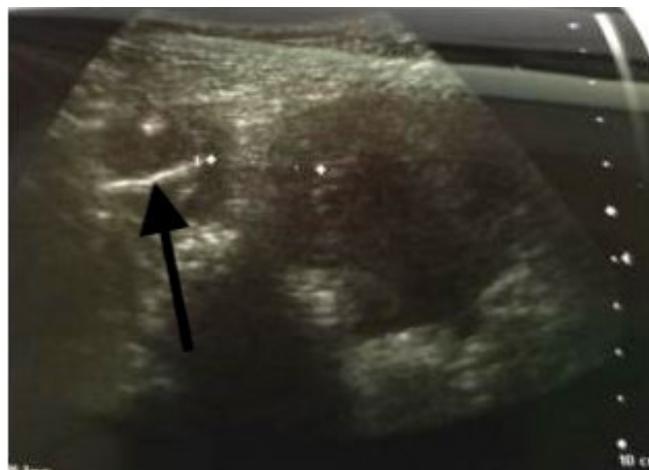


Figure 1. Abdominal ultrasound. The arrow shows a suspected IUD, but its actual location cannot be determined



Figure 2. Plain pelvic X-ray without contrast. The arrow shows an inverted IUD in a position contrary to the expected upright "T."

Discussion

A lost IUD where the string is missing during gynaecological examination can be identified with a plain pelvic X-ray but is unlikely to locate the site of the IUD. To locate the actual site of the lost IUD, the most accurate imaging technique is pelvic ultrasound and where appropriate pelvic CT scanning. Although the IUD is the most commonly reversible contraceptive method used worldwide, there are complications including uterine perforation.^[2,6] The risk of migration and uterine perforation varies depending on factors like anatomical configuration of the uterus and

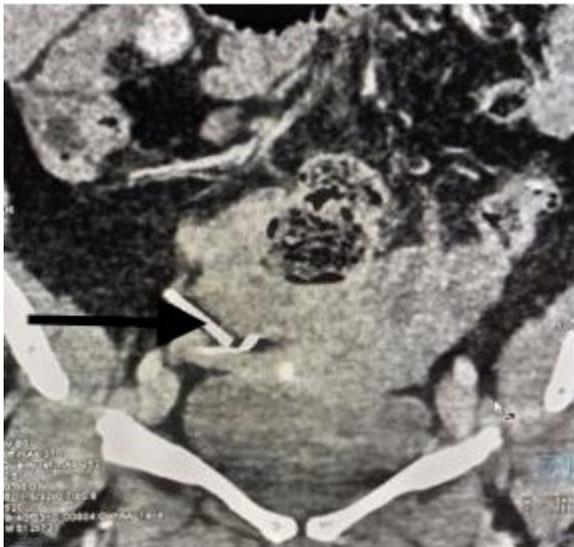


Figure 3. Computed Tomography (CT) of the pelvis. The arrow shows an inverted IUD in a position contrary to the expected normal upright "T." The IUD is partly embedded into the parametrium.



Figure 4. IUD string in the peritoneal cavity, a healthy right ovary, and a fallopian tube. The arrow shows a string of an IUD, as shown in Figures 2 and 3.

adhesions due to previous uterine surgery.^[7] In order to avoid complications associated with IUD insertion it is recommended that a uterine sound is used to minimize the uterine perforation and especially in cases of previous malposition or uterine anomaly leading to difficult IUD insertion.

In our case the plain pelvic X-ray revealed a projecting IUD into the pelvic region in an inverted T shape but did not indicate whether it was in or outside of the uterus. This did not help in the final management of the lost IUD. Pelvic ultrasound imaging located the IUD 2.5cm away from the fundus of the uterus on the right side and part of it in the myometrium. This finding indicated that the IUD was in the endometrial cavity and 2.5cm from the fundus of uterus which is the normal position for IUD. The string was not visualized in the vagina. At hysteroscopy the IUD was not found in the site indicated by pelvic ultrasound and may have been imbedded deeply in the myometrium.^[8,9] The pelvic CT scan reported a displaced IUD in the right myometrium extending into the peritoneum, so a laparotomy was carried out. An IUD was identified in the right fallopian tube with the string in the peritoneal cavity and the inverted T shape in the subserosa of the myometrium of the right fallopian tube, where it was found to be fixed.

The fimbria of the right fallopian tube and ovary were healthy as was the left fallopian tube and adnexae. This finding confirms that the plain abdominal X-ray and

pelvic ultrasound did not locate the lost IUD correctly. The pelvic CT scan concurred with the intraoperative finding.

Most uterine perforations occur during insertion of an IUD followed by immediate lower abdominal pain and dyspareunia. Our patient presented with a previously failed IUD insertion. Therefore, she was a candidate for Transabdominal Ultrasound Guided (TAUS-guided) insertion of an IUD. Other indications for this method of insertion include previous myomectomy, uterine fibroids, abnormal uterine position (extreme retroflexion/anteflexion or lateral deviation), and history of expulsion of an IUD as in this patient.^[10] The standard operating procedure for high-risk women during IUD insertion includes the use of a tenaculum on the cervical lip to straighten the axis of the uterus and stabilize the uterus. The application of traction on the tenaculum is to reduce the risk of perforation—careful uterine sounding to confirm that the patient is a candidate for IUD. The tenaculum should be removed slowly, then the strings trimmed to fit around the cervix (2-3 cm). It is recommended that a follow-up evaluation be performed after two to four weeks.

Serial radiological investigation does not suffice in making a definitive diagnosis. It is documented that a plain pelvic X-ray is inferior for locating the site of IUD, though it will indicate the presence or absence of an IUD due to its radio opacity. However, in our case, several investigations

were performed but the exact location of the IUD was not confirmed until laparotomy.^[11-15] Generally, abdominal pelvic ultrasound is the best technique for defining the site of the IUD. Additional radiological investigations, such as CT scanning, are recommended when there is suspected visceral injury.

The minimally invasive procedure, laparoscopy for a lost IUD is the most appropriate approach unless visceral perforation is suspected when laparotomy is indicated. For our case, following attempted hysteroscopy elsewhere and failure to locate the IUD, we suspected a perforation, and hence the indication for laparotomy after ultrasound confirmation of a migrated IUD.

Hysteroscopy, which was done elsewhere, reported a normal endometrial cavity. The migrated IUD from the endometrial cavity to the cornu of the fallopian tube posed a risk of visceral injury. Clinicians should individualize patient management based on investigation findings.^[12]

Conclusion

The plain abdominal X-ray has a limited diagnostic value in locating the site of a lost IUD but is useful in informing the clinician of its presence or absence. The location of a migrated IUD is best diagnosed by transabdominal ultrasound and where suspicions arise then abdominal pelvic CT scanning is advised. This case report should increase the awareness of this avoidable, but uncommon, complication. An immediate vaginal examination and pelvic ultrasound post-IUD insertion is advised. There was no obvious superiority of ultrasound over plain pelvic X-rays. Further tests were required to clarify the siting of the IUD and plan appropriate management.

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Conflicts of interest: None

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South Sudan Launches R21 Malaria Vaccine Rollout to Protect Children

16 JULY 2024

GAVI Alliance (Geneva)

PRESS RELEASE

Juba, South Sudan — In a historic move to combat the devastating impact of malaria, the Ministry of Health, in partnership with UNICEF, the World Health Organization (WHO) and Gavi, the Vaccine Alliance (Gavi), today launched the nationwide rollout of the R21 malaria vaccine. This landmark event marks a significant stride in the country's efforts to safeguard the health and well-being of its children. The launch follows the arrival of the first consignment of over 645,000 doses of the R21 malaria vaccine in Juba on 31 May 2024. These vaccines will initially be distributed to the 28 counties with the highest malaria burden, with plans to scale up the rollout nationwide.

https://allafrica.com/stories/202407160308.html?utm_campaign=daily-headlines&utm_medium=email&utm_source=newsletter&utm_content=aans-view-link

Neurocysticercosis epilepsy diagnosed by Magnetic Resonance Imaging

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ABSTRACT

Neurocysticercosis is prevalent in most developing countries where pork is consumed. It is estimated that approximately 30% of cases of epilepsy may be due to neurocysticercosis. We present a case of a middle-aged man who presented to a health facility in the city of Juba in South Sudan with tonic-clonic seizures and left-sided weakness. He was originally diagnosed as having epilepsy and Transient Ischaemic Attacks (TIA). Post-seizure confusion and odd behaviour prompted referral to a psychiatrist but was referred to the Juba Medical Complex (JMC) for a medical opinion and further management. The diagnosis of cysticercosis was confirmed on Computerised Axial Tomographic (CAT) scanning and Magnetic Resonance Imaging (MRI). Verbal consent was obtained from the patient to publish his clinical details anonymously.

Keywords: cysticercosis, epilepsy, albendazole, praziquantel, *Taenia solium*

Introduction

Neurocysticercosis is an infection of the central nervous system (CNS) and its meninges by the larval stage of the pork tapeworm *Taenia Solium*. *T Solium* infestation is endemic in low-income countries such as South Sudan where pigs are reared.^[1,2] It is the most frequent preventable cause of recurrent seizures and epilepsy in countries where cysticercosis is endemic.^[3] It seems to be infrequently considered as it is rarely mentioned in usual clinical practice. It is related to poverty and poor hygiene and is of high public health importance.^[1]

Case Report

A previously healthy 55-year-old South Sudanese male civil servant presented to a health facility in the city of Juba five days before referral to the JMC with a brief episode of sudden onset of dizziness. This was preceded by a sensation of objects in motion followed by a fall soon after generalized seizures occurred. After the cessation of the seizures, he developed left-sided weakness and confusion. The patient was initially admitted to a health facility elsewhere, where a diagnosis was made of either a transient ischaemic attack (TIA) or stroke. The history of seizure led to treatment initially with phenytoin (the dose nor route of administration were indicated in the letter of referral). Due to the history of confusion and unusual behaviour following the seizure, he was referred to a psychiatrist. On arrival at the

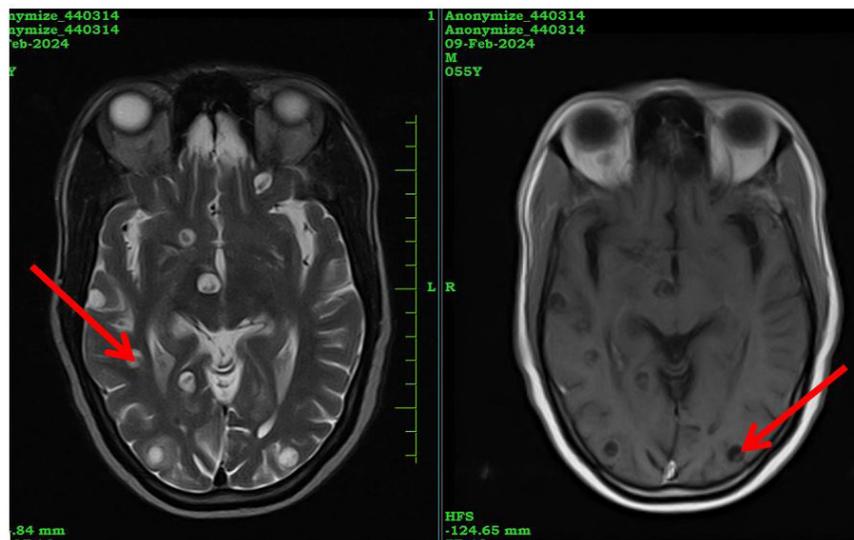


Figure 1. Brain MRI scans: Red arrows show cysticerci bright on T2 image (left) and dark on T1 image(right)

JMC, brain Computerized Axial Tomographic (CAT) and Magnetic Resonance Imaging (MRI) scans were carried out. The MRI scan confirmed cysticercosis causing the seizure.

He was unaccompanied to the consultation. He was found to be lucid, and able to tell the history of his condition. He denied ever suffering from epilepsy or other major illness except hypertension for which he received amlodipine. There was no history of alcohol consumption, cigarette smoking or use of recreational drugs. He was married and worked in the civil service of the government of South Sudan. There were no known allergies and his prescribed medications from the referring clinic and by the psychiatrist consisted of olanzapine, rosuvastatin, amlodipine, carbamazepine, aspirin and Cervitam, respectively. Cervitam is complementary treatment supposedly for remedying symptoms of cognitive impairment.

On examination he had a pulse of 78 beats per minute with a blood pressure (supine) 145/70 mmHg His temperature was 36.5°C. The reported left hemiparesis noted soon after the seizure had resolved, and power in all limbs was normal. The other symptoms that were initially noted at presentation five days earlier had completely resolved. The remainder of the physical examination was normal.

The following investigations were normal: full blood count, liver function tests, human immunodeficiency viral (HIV) serology, lipid profile, VDRL, serum calcium, serum magnesium, phosphate levels, chest X-ray, 12-lead electrocardiogram (ECG), transthoracic echocardiogram and carotid doppler duplex scan.

Radiologist's report on the Brain MRI scans:

- Multiple small cystic lesions with eccentric hypointense foci/scolices within them are scattered in both cerebral hemispheres, right basal ganglia, mid brain on right side and in the right cerebellum. A few of the lesions show peripheral enhancement and mild perilesional oedema without any significant mass effect.
- Similar lesions are also seen in the right orbit, in the right masticator space as well as in the soft tissues of the face on right side.
- Features are compatible with multifocal cysticercosis.

Clinical diagnoses

1. Seizures secondary to widespread brain involvement with cysticerci.
2. Todd's paralysis secondary to the tonic-clonic seizure.

The decision after consideration of all the clinical information and the various investigations led to the decision to manage the patient as an outpatient. He was commenced on albendazole 7.5mgs per kilogram body weight twice a day for up to thirty days, pending review in the outpatient clinic after ten days. A repeat brain MRI will be considered after thirty days. The alternative would have been praziquantel had it been available. The drugs he was prescribed at the initial health facility were discontinued, except for the carbamazepine. Although this drug is usually a second-line antiepileptic drug for the management of generalized seizures, it was retained because he had responded to it. His serum sodium will be monitored because carbamazepine may cause hyponatraemia. In the event of recurrence of seizures levetiracetam may be considered. The anti-psychotic medication prescribed by the psychiatrist was discontinued as his confusion and strange behaviour was likely due to a post-ictal state. He received a course of dexamethasone to avert an allergic reaction from the dying cysticerci in the brain.

Discussion

This previously well 55-year-old man suffered episodes of generalized seizures secondary to cysticercosis. Confusion

and loss of consciousness after a seizure are common and referred to as a post-ictal state. Typically, it is characterized by confusion, drowsiness, hypertension, psychiatric features, headache, and nausea. It may last 30 minutes to twenty-four hours.^[4]

The best way to control cysticercosis is the institution of rigorous meat inspection, especially pork, and hygienic methods of rearing pigs. The public must be informed to cook pork thoroughly to avoid ingestion of live *T. solium*.

Initially the patient denied eating pork in the recent past but after some recollection he remembered eating roasted pork some years previously in one of the hotels in Juba. Since then, he has not consumed pork. It is possible that poor hygienic conditions in the city may have contributed to contracting infection with *T. solium*.

Neurocysticercosis occurs following eating of undercooked, raw or under roasted pork that is infected with the worm, *T. solium*, or from drinking contaminated water with stool containing *T. solium*.^[5]

Unlike the other types of tapeworms, such as *T. saginata*, which infects cattle, this latter type of tapeworm is acquired by eating raw beef. Both the pig and the cow are the primary hosts and human beings are the secondary host.

T. solium eggs attach to the intestinal endothelium, where they mature into adult tape worms. Some of the eggs may enter the circulation and are disseminated throughout the body, becoming cysticerci within the human secondary host. These can be found in the muscles, myocardium, eyes, and the skin causing subcutaneous nodules all over the body. In the eyes it can lead to conjunctivitis, uveitis, retinitis, choroidal atrophy, and blindness. The eggs in the brain cause neurocysticercosis, which is a common cause of seizures in the countries rearing pigs in an unhygienic environment. Some observed common central nervous system symptoms include hemi-paresis/-plegia, odd behaviour, dementia, hydrocephalus, basal meningitis, cranial nerve symptoms, and in the spine, it can cause radicular or compressive symptoms. Some of my patient's symptoms were attributable to a post-ictal state, and others to the direct involvement of the brain by cysticerci.

The diagnosis of neurocysticercosis should be suspected in all patients, in low-income countries, who present with a seizure. Brain imaging using CAT and MRI scans is crucial as the latter demonstrate the presence of cysticerci (Figure 1). Additional tests include stool microscopy and anal swabs looking for the ova of *T. solium*, serology using

indirect haemagglutinin test, and cerebral spinal fluid (CSF) antigen test looking for eosinophils and detection of *T. solium* antigens in the CSF.

Treatment consists of control of seizures using a suitable available anti-epileptic medication such as phenytoin, which can be administered intravenously and orally, levetiracetam and others depending on availability. In the UK first line treatment tends to be lamotrigine and levetiracetam both for focal onset and generalised seizures. Since neurocysticercosis causes a focal brain injury it may reasonably be assumed that the seizures have a focal onset, even if this rapidly becomes generalised. Hence, most antiepileptic medications should be effective. In the event of lamotrigine and levetiracetam not being available then carbamazepine^[6] is a reasonable first choice as it has less adverse effects than phenytoin and phenobarbitone.

Albendazole given at 7.5mg/kg twice daily for 8 – 30 days or alternatively praziquantel will kill the cysticerci. An allergic reaction from the dying *T. solium* larvae may result in aggravation of symptoms and hence, the co-prescription of dexamethasone at 0.1mgs per kilogram body weight per day for 29 days or whatever period the patient is on the anthelmintic medication. This may ameliorate this reaction, although steroids remain controversial.^[5]

It was planned to review the patient after a month to assess the control of his seizures and repeat brain imaging. However, he did not attend the clinic for review. Efforts to trace his whereabouts through the referring doctor and relatives have been unsuccessful so far. If he should be located and reviewed a supplementary report will be submitted to the SSMJ.

Conflict of interests: None

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South Sudan launches Health Sector Transformation Project to enhance service delivery

July 22, 2024 – Juba, South Sudan: The Republic of South Sudan's Ministry of Health has officially started the Health Sector Transformation Project (HSTP), effective July 1, 2024. This initiative aims to improve the availability, quality, and accessibility of health services across the nation, ensuring they remain free at the point of use.

In recent years, the Ministry has partnered with various organizations to implement reforms that enhance management, funding, and sustainability within the health sector. These efforts have already led to significant improvements, particularly in primary and secondary healthcare services.

The HSTP will support a total of 1158 health facilities including 4 referral hospitals, 11 state hospitals, and a number of county hospitals, PHCCs and PHCUs across the country. Most of the supported health facilities include those previously backed by the Health Pooled Fund (HPF) and UNICEF/World Bank, and other humanitarian-supported sites in all states. Additional facilities will be integrated following thorough assessments by the Ministry of Health.

Key aspects of the HSTP include the provision of essential health supplies, capacity building for health workers, coverage of operational costs, and the payment of incentives to health service providers based on established staffing norms. The updated 'Health Workers

Harmonization Incentive Scale' will be applied to ensure fair compensation for healthcare professionals. To enhance accountability, the payment of incentives will utilize biometric verification for eligible health workers, streamlining the process and ensuring support reaches those delivering care.

In her official letter to the Directors General of the State Ministries of Health across the country, Dr Harriet Akello Pasquale, Undersecretary of the Ministry of Health, expressed appreciation for the collaboration from State Ministries of Health, County Health Departments, and partners. She emphasized the importance of adhering to established protocols, including maintaining a Human Resources Information System (HRIS) and attendance monitoring.

The HSTP will establish minimum staffing norms for health facilities, ensuring adequate human resources to deliver effective care. The Ministry has outlined specific staffing requirements, highlighting the need for justifiable requests for additional personnel based on patient caseloads.

As South Sudan embarks on this transformative journey, the Ministry of Health remains dedicated to improving health outcomes for its citizens through enhanced service delivery and collaboration.

Phalangeal microgeodic syndrome: A case series in five adults

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ABSTRACT

Phalangeal Microgeodic Syndrome (PMS) is rare, characterised by cold related discolouration, pain and swelling of the digits. A handful of case reports exist mainly in a paediatric population in Japan. We describe five cases of PMS. The underlying aetiology remains uncertain, however, a possible correlation with infection or autoimmune dysregulation may suggest a common pathway which is yet to be identified. However, many cases seem to resolve spontaneously.

Keywords: Phalangeal Microgeodic Syndrome, Raynaud's phenomenon, paediatrics, aetiology

Introduction

Phalangeal microgeodic syndrome (PMS) is rare, characterised by cold related discolouration, pain and swelling of the digits. A handful of case reports exist mainly in a paediatric population in Japan.^[1]

PMS appears to be distinct from Raynaud's phenomenon (RP). In both conditions, MR imaging demonstrates abnormal bone marrow signal.^[2,3] In primary RP, signal abnormality starts at the distal phalangeal tuft, progressing proximally.^[4] However, signal abnormality in PMS preferentially affects the middle and proximal phalanges.^[5]

PMS is largely described as an isolated condition, although a single case of PMS in a patient with existing systemic lupus erythematosus (SLE) has been published.^[6]

Case reports

We describe five cases of PMS in this paper. Written informed consent was obtained for all cases.

Case 1

A 24-year-old Caucasian female developed dusky red discolouration of the distal fingers with episodic tenderness and swelling during the Winter of 2020. Cardiolipin IgG antibody was just raised at 10GPLU (normal range: 0.0-9.9), but normalised on repeat testing. MRI scan demonstrated bone marrow oedema in the middle phalanx of both middle fingers and left middle finger distal phalanx on the right with superficial soft tissue oedema. By July 2021 the symptoms had improved spontaneously. (See Figure 1)

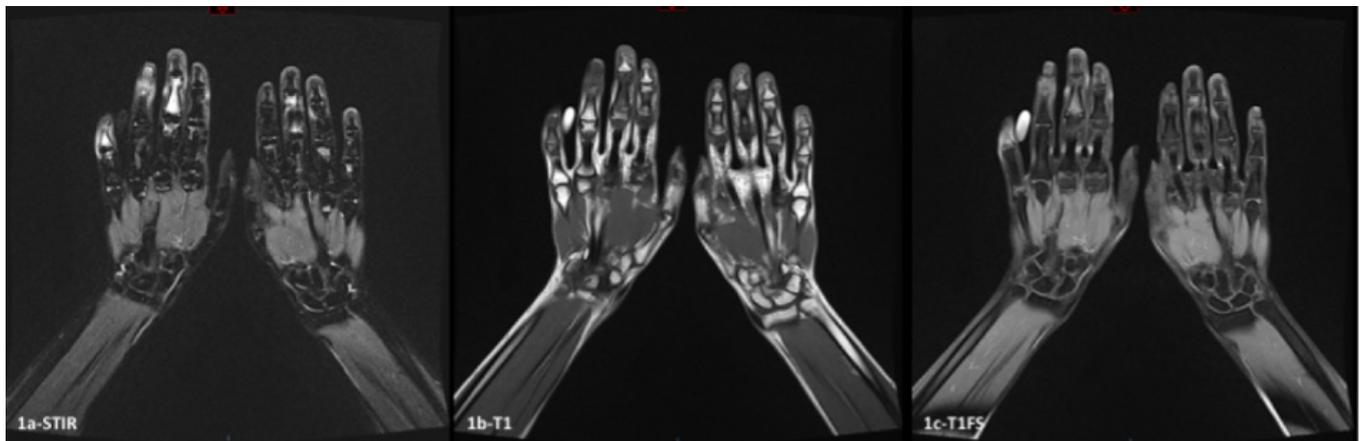


Figure 1a-c: MR Image both hands (1a Cor STIR, 1b Cor T1w 1c Cor T1FS post Gadolinium)

There is high signal in middle phalanx of both middle fingers and left little finger with similar changes in the distal phalanx of the left little finger. Corresponding decreased signal in the T1w sequence and mild enhancement on the T1FS. Surrounding soft tissue oedema also present.

Case 2

A 79-year-old Caucasian female presented with new onset pain, redness and swelling centred around the proximal interphalangeal (PIP) joints of both hands. Symptoms started two days after receiving the first dose of Pfizer/BioNTech RNA vaccine against Covid-19 in January 2021. Rheumatoid factor (RF) was marginally raised at 17 IU/ml (normal: <14IU/ml). MRI scan of both hands demonstrated bone marrow oedema in the proximal, middle and distal phalanges of all the fingers. Symptoms resolved after six weeks, with no significant adverse reaction to the second dose of Covid-19 vaccine.

Case 3

A 60-year-old Caucasian female presented in January 2021 with recurrent pain and swelling in the fingers during the winter for three years, associated with new onset biphasic RP, but no other features of connective tissue disease (CTD). Immunological tests were negative. Musculoskeletal ultrasound excluded synovitis. MRI showed bone marrow oedema affecting the proximal phalanges of both index fingers, proximal and middle phalanges of the left middle and index fingers and all phalanges of the little finger on the right. A trial of amlodipine had no impact on symptoms and was discontinued.

Case 4

A 40-year-old Korean female with SLE (histologically

proven cutaneous involvement, ANA positive, La antibody positive 30U/ml, no history of RP) on maintenance hydroxychloroquine and methotrexate developed acute pain, swelling, and redness of the right distal little finger in December 2020. MRI of the right hand in January 2021 showed bone marrow oedema in the right index to small digits with no synovitis. A course of prednisolone was prescribed and methotrexate dose increased (from 7.5mg to 12.5mg weekly), which had no impact on symptoms. 60mg intravenous (IV) pamidronate was given in February 2021. In March, symptoms were only modestly better so modified release nifedipine 10mg once daily was issued. By May 2021, the right-hand symptoms had improved but new symptoms had developed on the left.

Repeat MRI June 2021 showed improvement in appearances. A further 60mg IV pamidronate was given in November 2021, followed by a significant improvement in the hand symptoms four weeks later.

Case 5

A 36-year-old Caucasian female developed pain and purple discolouration of the toes in November 2020. In January 2021, she had similar symptoms in the fingers of both hands. Musculoskeletal ultrasound excluded synovitis. MRI scan of the right hand confirmed patchy bone marrow oedema in all the phalanges excluding the thumb. By July symptoms had improved spontaneously. Just prior to symptom onset, the patient had a confirmed exposure to Covid-19 and had to self-isolate although no infection was confirmed.

Discussion

In these authors' experience, it would appear the incidence of PMS is increasing, which may relate to the especially cold winter of 2020/21. The patient with co-existing SLE appeared to have more refractory disease with persistent symptoms despite increasing seasonal temperatures. Management is conservative with avoidance of cold exposure being paramount, similar to Raynaud's phenomenon.

One patient developed symptoms two days after receiving the first dose of Pfizer/BioNTech RNA vaccine against Covid-19. One patient had to self-isolate following a Covid-19 contact and developed symptoms of PMS shortly thereafter, although there was no proven infection in the affected individual. Chilblain-like acral lesions have been associated with Covid-19 infection, although evidence is conflicting.^[7,8,9] One case report associates chilblains and the Moderna vaccine.^[10] Any association between Covid-19 infection or vaccine and PMS is purely hypothetical and would require more study to identify any true relationship. The underlying aetiology remains uncertain, however, a possible correlation with infection or autoimmune dysregulation may suggest a common pathway which is yet to be identified.

Conclusion

PMS is a rare condition with an uncertain aetiology although there are pointers to a possible association with infection and / immunological disturbance. Many cases seem to resolve spontaneously.

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Transforming stroke care in Africa: Early initiatives of a UK-based charity

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Introduction

Stroke is a serious global health concern, ranking as the second-leading cause of death and the third-leading cause of death and disability combined worldwide.

^[1] Despite improvements in stroke management, the incidence of stroke among individuals under the age of 55 years is rising, leading to increased economic costs. While age-standardized stroke mortality rates have declined over the past three decades due to advancements in stroke treatments, particularly reperfusion strategies and acute rehabilitation, the global cost of stroke exceeds US\$721 billion, accounting for 0.66% of the global GDP. However, the decline in incidence and mortality rates is less pronounced in Africa, where a disproportionate burden of stroke affects individuals of African ancestry compared to other racial/ethnic groups.^[2,3]

Hypertension is a major risk factor for stroke, particularly in Africa, where over 90% of patients with haemorrhagic stroke and more than half of those with ischaemic stroke have high blood pressure.^[4] The annual incidence rate of stroke in Africa is among the highest globally, with prevalence rates notably high in Nigeria and other regions of Western Africa.^[5]

Over three-quarters of the global stroke burden is borne by low-income and middle-income countries (LMICs), with stroke occurring among individuals about ten years younger than in high-income countries (HICs). Nigeria, like many sub-Saharan African countries, is experiencing a rising epidemic of stroke. Recent reports show cardiovascular diseases as the leading cause of medical admission.^[6]

The burden of stroke is largely attributed to modifiable risk factors such as hypertension, smoking, physical inactivity, poor diet, obesity, dyslipidaemia, diabetes mellitus, psychosocial stress, depression, and cardiac causes. In West Africa, these risk factors are common in both sexes.^[7]

To address the burden of stroke, strategies for improving acute stroke care services are crucial. Stroke units have shown significant clinical benefits, including improved motor function, decreased dependency and reduced mortality. However, the implementation of evidence-based acute stroke care remains low in Africa, including Nigeria, where clinical services for stroke patients are inadequate due to resource limitations and inadequate neurodiagnostic facilities and clinical specialists.^[8] Efforts to improve stroke care in Nigeria face challenges related to socio-economic and political dynamics,^[9,10] as well as insufficient healthcare infrastructure and trained personnel. Despite these challenges, comprehensive evaluation and improvement of stroke care structures, processes, and outcomes are essential for enhancing stroke management across sub-Saharan Africa.^[10,11]

The Frederick Foundation, a UK-based charity, is leading an effort to support



Figure 1. Speakers at the Frederick Foundation Launch, February 03, 2024, L to R, Emeritus Professor Margaret Esiri, Dr Joyce Balami, Lord Charles Cecil, Professor Godwin Ogbole, Professor Gabriele DeLuca. (Courtesy: SMART Africa Network)

researchers and teams at a tertiary hospital in Nigeria. This initiative aims to provide resources and training for local experts, empowering them to develop innovative stroke treatment strategies and reduce the region's stroke burden. It includes establishing an acute stroke unit and creating educational exchange programmes with institutions like the University of Oxford. Through these efforts, the Foundation seeks to transform stroke care in Nigeria, improve health outcomes for stroke patients and reduce the stroke burden.

The creation of the Frederick Foundation (FF)

The Frederick Foundation, initiated by Emeritus Prof. Margaret Esiri in honour of her late husband, Dr Frederick Esiri, supports the University College Hospital Ibadan Acute Stroke programme, led by Prof. Rufus Akinyemi and Prof. Adesola Ogunniyi, alongside Prof. Godwin Ogbole, all renowned stroke researchers in Nigeria. FF's support aims to strengthen the UCH Stroke workforce and enhance the stroke care unit at the hospital.

FF's creation signifies a milestone in healthcare philanthropy, driven by a commitment to addressing critical health challenges in Africa. Founded to catalyse transformative change, FF emerged from dedicated individuals passionate about improving healthcare outcomes across the continent.^[12]

The foundation recognizes the pressing need for sustainable healthcare solutions in Africa and is focused on improving health outcomes and well-being in underserved communities through targeted interventions and innovative approaches.

Through investments in research, prevention, and treatment, FF aims to pioneer innovative approaches to stroke care and rehabilitation, becoming a leading advocate for stroke awareness and intervention.

As FF expands its reach, it remains steadfast in empowering communities, transforming healthcare systems, and creating a brighter, healthier future for all.

Relationship with Africa-Oxford Initiative (AfOx)

AfOx is a cross-university platform based at the University of Oxford that facilitates equitable and sustainable collaborations between researchers at the University of Oxford and African universities. It has been supporting educational programmes in Africa since its establishment in 2016.

The collaboration between the FF and the Africa-Oxford Initiative (AfOx) is a vibrant partnership aimed at tackling crucial health issues, particularly the prevalence of stroke, in Nigeria and beyond. Rooted in shared values and existing ties with African institutions like the University of Ibadan, the FF and AfOx partnership is marked by synergy, innovation, and a joint commitment to enhancing sustainable healthcare outcomes. FF and AfOx have established a strategic alliance focused on implementing effective interventions, advancing medical research, and strengthening healthcare systems to address the challenges posed by stroke.^[13]

Support for the UCH Ibadan Stroke Programme

The University College Hospital (UCH) Ibadan Stroke

Programme is a vital initiative to meet the urgent healthcare needs related to stroke in the region. UCH Ibadan was chosen as the focal point due to its status as a leading healthcare institution in Nigeria, serving a population of over 10 million for over 50 years.

Through thorough assessment, the UCH Ibadan Stroke Programme has identified significant gaps in stroke care delivery, including limited access to specialized treatment, insufficient resources for neuroimaging and rehabilitation, and low awareness about stroke prevention and management.

In response, the FF has pledged to do its best to target support to enhance the capacity of UCH Ibadan stroke care services. This support includes:

1. **Capacity Building:** FF has proposed to train healthcare professionals at UCH Ibadan in the latest stroke diagnosis, treatment, and rehabilitation techniques to empower them to provide optimal care for Nigerian patients.
2. **Infrastructure Enhancement:** FF will upgrade infrastructure and procure equipment to strengthen stroke care facilities, including consumables for advanced medical and imaging diagnostic tools.
3. **Community Outreach and Education:** FF will collaborate with UCH Ibadan to raise awareness about stroke prevention and treatment options through educational campaigns and community engagement initiatives.
4. **Research and Innovation:** FF proposes support for research projects at UCH Ibadan to advance understanding of stroke epidemiology and develop novel interventions for specific regional challenges.

By addressing these areas of need and fostering collaboration, the UCH Ibadan Stroke Programme, with FF's support, aims to significantly improve stroke care delivery and outcomes in Nigeria that could be easily replicated across sub-Saharan Africa after a few years.

Launch of FF and initial progress

The FF was launched on February 3, 2024, marking a key milestone in its mission to address healthcare challenges in Nigeria and beyond. The event gathered government

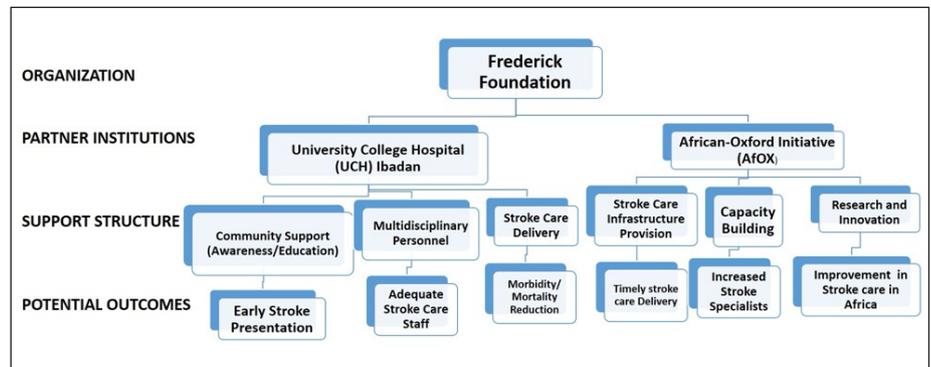


Figure 2. Frederick Foundation programme structure

officials, healthcare professionals, researchers, and community leaders to outline FF's objectives and foster collaborative efforts in healthcare improvement.

Highlights from the launch included presentations by FF leadership, outlining the Foundation's vision, mission, and strategic goals. Attendees learned about FF's commitment to enhancing stroke care services, promoting research and innovation, and fostering partnerships for positive change in healthcare delivery.

Early achievements showcased FF's dedication, including strategic partnerships with the University College Hospital (UCH) Ibadan and the Africa-Oxford Initiative (AFOX). Through these partnerships, FF hopes to accelerate progress in Nigeria's stroke care research, education, and clinical practice.

FF is advancing its mission of improving stroke care and healthcare outcomes in Nigeria by fostering partnerships, driving innovation, and engaging stakeholders. The launch event and subsequent progress demonstrated FF's commitment to addressing stroke-related health disparities and collecting data to make a meaningful difference in this Nigerian community.

Potential impact of FF in Nigeria and the 5-10 year Vision

FF's interventions extend beyond individual patient outcomes to influence healthcare systems and policies. In the next 5–10 years, FF plans to expand its reach across Nigeria, forming partnerships with healthcare institutions, academic centres, and government agencies. It aims to scale up existing programmes, launch new initiatives, and diversify funding sources for sustainability. FF envisions integrating its interventions into routine healthcare practices, leading to lasting improvements in

stroke outcomes and the general population's health. Its programmes and structure are outlined in Figure 2.

Central to FF's vision is reaching under-served populations, particularly in rural areas, using technology and innovative delivery models to bridge healthcare disparities. Supporting FF's mission offers an opportunity to contribute to meaningful healthcare transformation in this resource-challenged setting. Donations, volunteering, advocacy, and partnerships are ways individuals and organizations can support FF's initiatives.

One of FF's major targets is overcoming significant challenges faced by stroke patients, including limited access to brain scans for individuals without medical insurance, retaining trained staff who frequently leave the region for better opportunities, and obtaining visas for international trainees. Despite these challenges, FF remains committed to its mission of improving stroke care and public health outcomes in Nigeria.

In conclusion, FF's journey reflects a steadfast commitment to improving stroke care and education in Nigeria. With the collaboration of friends and donors, FF aims to make a lasting impact, transforming stroke care systems and improving the lives affected by stroke-related challenges in Nigeria.

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Annual health dialogue report in Kigile Payam, Maiwut County, Upper Nile State, South Sudan

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Introduction

The Nile Initiative Development Organization (NIDO) in consortium with Relief International (RI) are currently implementing South Sudan Covid-19 Emergency Response Health System Strengthening Programme (CERHSP) funded by the World Bank through UNICEF. The project is currently supporting 25 health facilities in Longechuk and Maiwut Counties under Lot 4, of which 15 health facilities are in Longechuk and 10 health facilities in Maiwut.

In Longechuk, RI is supporting 10 health facilities including Mathiang, Watber, Udier PHCCs, Belwang, Jangok Warweng, Majiok, Malow, Pamach and Malual PHCUs. While NIDO is supporting five health facilities including Chotbora PHCC, Dajo, Guelguk, Wichlita and Chotlual PHCUs. RI is supporting three Bomas for its Community Health activities (Tochwengthok, Palguop and Mabor), while NIDO is supporting Mangok Boma for its Community Health activities.

In Maiwut, RI is supporting five health facilities namely Wunkir PHCC, Jotome, Malek, Jekow and Uleng PHCUs. Similarly, NIDO is supporting five health facilities including Pagak PHCC, Pinythor, Nyatok, Turu and Kigile PHCUs. RI is also supporting two Bomas (Palang and Woor) for its Community Health activities while NIDO is supporting Abajabe Boma for its Community Health activities.

This project intends to reach 228,526 people with 110,445 people in Longechuk and 118,081 people in Maiwut.

One of the key activities is to carry out community engagement activities to ensure that local communities are well informed and regularly updated about the project.

So, NIDO, and its consortium implementing partners, have undertaken community engagement activities, that are achieved through community meetings; this Annual Health Dialogue is an example.

Implementing partners for this project are required by the donors (World Bank and UNICEF) to carry out an Annual Health Dialogue every year but this is rarely done; therefore, this report could serve as a reference for any implementing partner interested in carrying out this event.

The general objective of the exercise was to review and discuss the BHI programme performance and to carry out health planning for the year 2024. The specific objectives were to:

- Review BHI programme performance for the years 2020 to 2023,



Figure 1. Chief Guest delivering a key note speech during the event



Figure 2. Chief Guest cutting the ribbon during the inauguration of the new health facility in Kigile

- Discuss BHI programme implementation challenges and come up with the way forward,
- Conduct annual health planning for the year 2024, and
- Open the newly constructed health facility building for Kigile PHCU.

Structure of the Dialogue

The Annual Health Dialogue involved: presentation by facilitators, questions and answers, group discussions, group planning, and key note speeches from County authorities. The tools used were flip charts, ball pens, note books, pens, soft papers, decoration papers, flowers, megaphones and batteries, chairs and tables.

The event included: Opening prayer, welcoming and opening remarks, review of BHI programme performances for the previous years, discussion on key challenges affecting the BHI programme operation in the County, annual health planning for the year 2024, speeches from various County authorities and opening of the newly constructed health facility building. See Figures 1 and 2.

The total budget for the event was 427 USD, which was used for refreshments such as: water, sodas, tea, coffee, lunch, and transportation.

Outcomes of the Dialogue

The dignitaries who participated during the event were:

County Health Department Director (Chief Guest), County SPLM party Secretary, County, Land and Survey, County Trade and Commerce, County Gender and Social Welfare Directors, Kigile Payam and Woldessa Payam Administrators, Head and Sub Chiefs for Kigile, Woldessa, Ras koor and Maiwut 2, Relief International (RI)/Lot 4

Lead Consortium partner, Access for Humanity (AFH) and Nile Initiative Development Organization (NIDO)/ Lot 4 consortium member representatives.

Accomplishments

A total of 154 people participated in the event; 128 adults (100 male and 28 female) and 26 children (12 male and 14 female). It was conducted for one day on 07/12/2023 from 9:30 am – 3:05 pm, at Kigile PHCU where the newly constructed health facility building was officially opened.

NIDO BHI programme achievements between January 2020 and November 2023

Operationalization of BHI programme in Kigile Payam's Abajabe Boma since January 2020, where a total of 19 Boma Health Workers (BHWs) were recruited, trained, and deployed across various villages in Kigile Payam to ensure that Community Health activities (BHI) are undertaken.

Since the inception of the BHI programme in January 2020 to Nov 2023, 54,989 under-five year old children were treated for the three common causes of morbidity and mortality (malaria, pneumonia, and diarrhoea), and 3,984 were referred for further care and support.

Kigile PHCU was reopened at the beginning of 2023 after nearly 10 years when it was closed due to conflict. A total of 15 health care workers were deployed to support the health facility. A new semi-permanent structure with 3 rooms was constructed by Kigile community with support from NIDO. To improve the quality of services delivery, health facility staff were supported with on job training, mentorship, and refresher trainings to ensure that their knowledge and skills are empowered. In June 2023, supplies were received from UNICEF and last mile delivery was completed. The new health facility received furniture to support its operation.

Key discussions/recommendations during the event

During the event, the following key points were underlined by the invited dignitaries:

Lack of enough health services for far Bomas like Woldessa, Raskoor, Phil and Katenbuoy; difficulty of referring sick patients due to poor road condition; need to upgrade Kigile PHCU into a PHCC, since PHCU services are not enough for the served population and lack of nearby referral point with advanced services where critically sick patients could be referred to; promotion of peace, unity and co-existence among the communities across the County; need for extensive community sensitization especially on promotion of utilization of existing health services in the County, this is especially importance mainly for MCH services like ANC, health facility delivery, post-natal care, family planning, immunization and early seeking of health care when someone is sick especially under-five year old children and pregnant women; equity in distribution of resources across different Payams in the County; need to consider Kigile Payam for nutrition services like: Outpatient Therapeutic Feeding Programme (OTP) and Targeted Supplementary Feeding Programme (TSFP); improvement of cooperation between the local chiefs and the County government; need for more cooperation between the County Health Department (CHD) and the health implementing partners in the County.

Payam and County authorities should ensure that the supported health facilities are properly equipped with qualified health workers and supported/monitored to ensure that they are carrying out their roles and responsibilities in a professional way.

Plans for 2024

During the event, the following points were underlined as plans for 2024:

- Installation of EPI fridges at Kigile PHCU and other health facilities like Nyetok and Jekow PHCUs to improve the delivery of EPI services among the Bomas in the County;
- Extension of health services to far distant Bomas through static and community health services (expansion of BHI activities);
- Initiation of nutrition services (OTP and TSFP) in Kigile and other payams;
- Provision of medical equipment, for example, patient beds, delivery couch, examination bed;

- Continuous engagement with State Ministry of Health/National Ministry of Health/and donors to improve the supply of medical supplies;
- Construction of woman friendly space in Kigile and other payams in the county;
- Mass measles and polio vaccination campaigns in Kigile and other payams in the county;
- Health facility staff screening to ensure that qualified staff are in place;
- Revision of harmonized incentive policy; and capacity building for health workers, with on job and refresher trainings, to empower them with necessary knowledge, experiences and skills that would enable them to carry out their work diligently, and continue to support and expand the existing health services in the county.

Challenges faced during the event

Most of the event participants were from Kigile and Maiwut 2, lack of sufficient budget limited the number of participants, and accessibility to Kigile was difficult as some parts of the road were flooded.

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Letter to the Editor

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Eradicating helminthic infections



Dear Editor,

Thank you and your entire team for establishing and maintaining the SSMJ despite limited resources.

I enjoyed reading the last edition of the SSMJ. My attention was drawn to the interesting case reports, especially the one on the endoscopic diagnosis of hookworm infestation.^[1] This case, in my opinion, illustrates the failure of even the most expensive curative medicine in eradicating helminthic infestations and improving the lives of people in a community. Provision of clean drinking water and adequate sewage disposal would be more effective in this regard. Furthermore, technologically advanced, and expensive sanitation systems are not always necessary for achieving that goal. Low cost, basic, sanitation systems such as latrines and diversion of surface water away from shallow wells can serve any community very well.

Therefore, I would like to suggest that a future edition of the SSMJ be devoted to the promotion of basic, public health measures that will help in eradicating helminthic infections not only in South Sudan, but also throughout Sub-Saharan Africa.

1. Abdirahman et al. Endoscopically diagnosed hookworm infestation in an adult with chronic iron deficiency anaemia, South Sudan Medical Journal, 2024;17(2):75-80 © 2024 The Author (s) License: This is an open access article under [CC BY-NC](https://creativecommons.org/licenses/by-nc/4.0/) DOI: <https://dx.doi.org/10.4314/ssmj.v17i2.7>

Obituary: Mr Richard Hassan Kalamsakit, a pioneer orthopaedic surgeon in Sudan

Mr Richard Hassan Kalamsakit, who died on 3rd July 2024, at Chennai Hospital in India after a short illness, was a well-respected senior orthopaedic surgeon who accomplished a lot in Sudan and South Sudan.

He was born in Tonj District, South Sudan, on January 1st, 1938, the fifth born of his parents. His father was Bumboutee Ungeuree Bakay Bu, known as “Kalamsakit”, from the Azande tribe, Ambata Clan of Bangazagino Payam, Ibba County, Western Equatoria State; his mother was Nyagan Kulang, from the Dinka tribe, Atout Clan of Yiröl County, Lakes State. He married Joyce Marquez Lawrence, from Trinidad and Tobago, on 20th December 1975.

Mr Richard went to elementary and intermediate schools in Atot and Loka respectively and went on to Rumbek Secondary School from 1953 to 1957. He was admitted to the University of Khartoum to study medicine and graduated with a Bachelor's Degree in Medicine and Surgery in 1963.

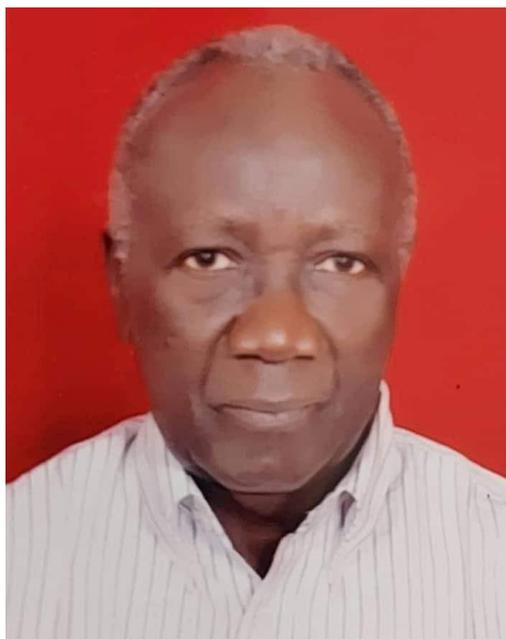
After completing his housemanship in Khartoum, Mr Richard was transferred to Wau Hospital in 1965, but returned immediately after the 1965 Wau incident to work in Omdurman Hospital. In 1966 he was transferred to El Fasher Hospital and he also worked in Zalingi until 1968.

From 1968 to 1970, he went for his postgraduate studies in general surgery and gastrointestinal surgery in Edinburgh, Scotland, where he worked in the unit of Sir John Bruce. He earned his Fellowship of the Royal College of Surgeons in 1970, the first Sudanese from South Sudan to do so.

Dr Richard worked in many hospitals in Scotland. As a senior fellow of the Royal College of Surgeons of Edinburgh, he was an international examiner. From 1973 to 1974, he was sent to do orthopaedic surgery in Berkshire in Reading Hospital and Nuffield Orthopaedic Hospital in Oxford where he worked with Professor Duthie and Professor Somerville. After finishing, he went to Derbyshire where he did hand surgery.

After returning to Sudan, Mr Richard continued at the University of Khartoum and helped in the establishment of the Department of Orthopaedic Surgery and subsequently became the head of the department. In 1974, he volunteered to give service for children with disabilities at the Cheshire Home in Khartoum.

From 1982 to 1984 he helped to establish the School of Medicine at the University of Juba and was appointed as Dean of the Faculty of Medicine. While in Juba,



“He has paved the way for future generations of medical professionals, setting a standard of excellence and compassion”

he also worked for Usratuna. In early the 1990s he was offered a Senior Consultant position at the Bakhsh Hospital in Jeddah, Saudi Arabia.

During his distinguished career, Mr Richard dedicated his life to serving others, saving lives, and teaching young doctors. He has left his indelible touch and will continue to live on among his students and patients. He was a simple and humble person among his colleagues, relatives, friends, and all the people he met.

The South Sudan Orthopaedic and Trauma Society said of him: “his work has paved the way for future generations of medical professionals, setting a standard of excellence and compassion.”

Mr Richard is survived by his wife, five daughters, Nyagan, Sarah, Elizabeth, Margaret, and Jane, and a son, Richard Jr., He had three grandchildren (two boys and one girl).

South Sudan Orthopaedics and Trauma Society sends condolences to the family and friends of Mr Richard Hassan Kalamsakit

It is with profound sadness and heavy hearts that we, the members of the South Sudan Orthopaedics and Trauma Society (SOTS), extend our deepest condolences on the passing of Mr. Richard Hassan. Mr Hassan was not only a revered surgeon but also a true pioneer in the field of orthopaedics and trauma in South Sudan.

As a leader and a visionary, Mr Hassan’s contributions to the medical community have been unparalleled. His commitment to advancing orthopaedic care and his tireless efforts to improve trauma services have left an indelible mark on our nation’s healthcare system. Through his dedication, he has touched countless lives, providing hope and healing to those in need.

Mr Hassan’s legacy as a South Sudanese surgeon leader is one of inspiration and profound impact. His work has paved the way for future generations of medical professionals, setting a standard of excellence and compassion that we will strive to uphold. His vision and leadership have been instrumental in shaping the practices and principles that guide us today.

In this time of mourning, we join you in honouring Mr Hassan’s memory and celebrating his remarkable life. His spirit will continue to inspire us, and his contributions will never be forgotten. We share in your grief and extend our heartfelt sympathy to his family, friends, and all who had the privilege of knowing him.

May his soul rest in eternal peace and may we all find solace in the legacy he has left behind.

With deepest condolences,

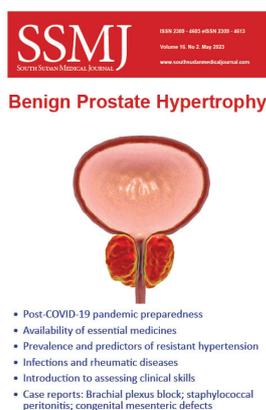
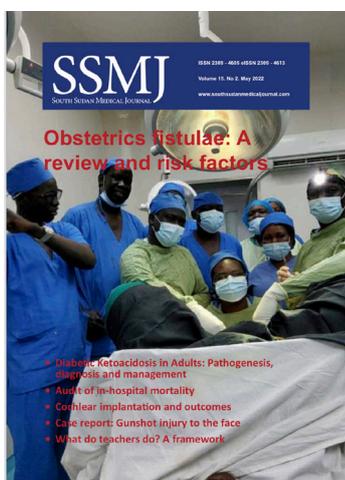
South Sudan Orthopaedics and Trauma Society

The South Sudan Medical Journal is looking for volunteers to join its Editorial team

Contact the Chief Reviewer,
Dr David Tibbutt at datibb12@gmail.com
if you are able to:

1. Assist with Editing and Managing articles submitted to the journal - needed are:
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 - Time to respond quickly to emails;
 - Experience of health care in an African context.And/Or
2. Assist with checking statistical data in submitted articles: needed are:
 - A good knowledge of statistics for academic publications;
 - Time to respond promptly to requests from the Editor.

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Every effort has been made to ensure that the information and the drug names and doses quoted in this Journal are correct. However readers are advised to check information and doses before making prescriptions. Unless otherwise stated the doses quoted are for adults.