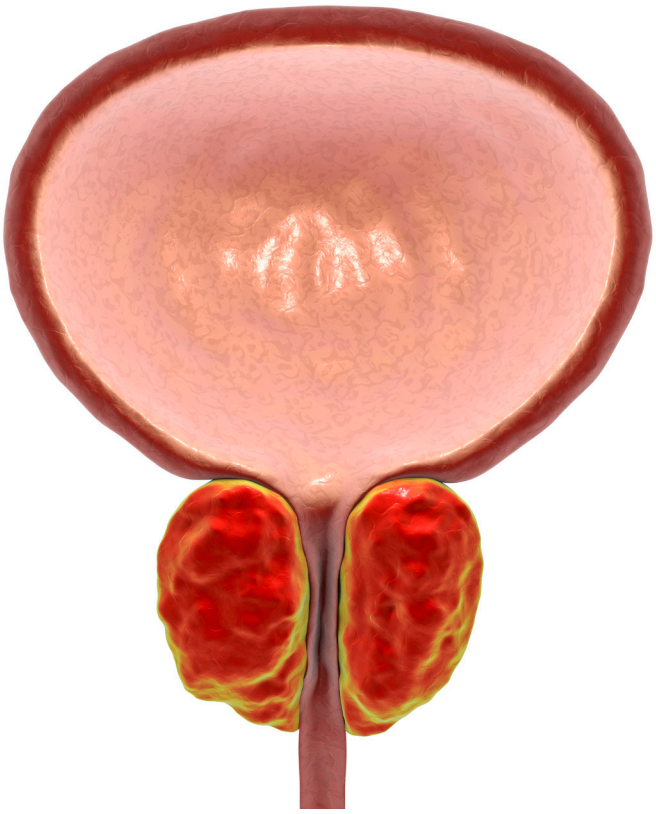
SSMJ
South Sudan Medical Journal

ISSN 2309 - 4605 eISSN 2309 - 4613

Volume 16. No 2. May 2023

www.southsudanmedicaljournal.com

Benign Prostate Hypertrophy



- Post-COVID-19 pandemic preparedness
- Availability of essential medicines
- Prevalence and predictors of resistant hypertension
- Infections and rheumatic diseases
- Introduction to assessing clinical skills
- Case reports: Brachial plexus block; staphylococcal peritonitis; congenital mesenteric defects

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South Sudan Medical Journal

ISSN 2309 - 4605 eISSN 2309-4613 Volume 16. No 2. May 2023

A Publication of the Health and Social Sciences Research Institute of South Sudan

Juba, South Sudan

Email: southsudanmedicaljournal@gmail.com **Website:** www.southsudanmedicaljournal.com

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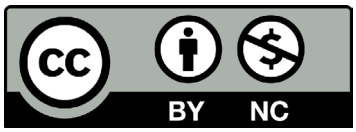

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Post-COVID-19: How to prepare for the next pandemic

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South Sudan urgently needs a pandemic influenza preparedness strategy if we are to survive the next big one.[1] COVID-19 was the wake-up call. Globally, as of April 2023, there were 764,474,387 confirmed cases of COVID-19, including 6,915,286 deaths.[2]

Although the COVID-19 pandemic did not cause so much devastation and deaths in many African countries, including South Sudan, it could have been worse, considering our poor health infrastructure and high poverty levels.

As the world reviews the effects of COVID-19 and discusses the lessons learned, texts are being written about the next pandemic and how to prepare for it. Recently the World Health Organization launched its new pandemic prevention plan.[3]

For the resource-rich world, preparedness for the next pandemic revolves around early identification and containment of the new virus, development and distribution of vaccines against the virus, stockpiling effective personal protective equipment, and preventing the disease from getting into their countries.

In a globalized world, a new deadly virus could spread quickly. Policymakers must ensure that South Sudan develops a pandemic influenza preparedness strategy. If implemented well, the strategy would prevent or slow the entry of the virus into the country, increase surveillance and detection, reduce its spread, and prepare for mass casualties and hospitalizations.

Here are a few recommendations on what needs to be done:

- Establish a permanent national pandemic preparedness and response coordinating body
- Focus on preventing entry of the disease into the country
- Establish surveillance systems for early detection of cases
- Set up prevention strategies and activities
- Prepare for large numbers of hospitalizations and deaths nationwide
- Prepare to maintain critical functions and recovery after the pandemic
- Provide adequate funding to support the rapid implementation of the plan

Among the many health priorities we face as a country, the fear of another pandemic may seem far-fetched. However, the recent re-emergence in nearby countries of viruses such as Ebola Virus Disease should be our call to be better prepared.

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Citation: Kenyi, E. Post-COVID-19: How to prepare for the next pandemic, South Sudan South Sudan Medical Journal 2023;16(2):44 DOI: https://dx.doi.org/10.4314/ssmj.v16i2.1

Cross-sectional study on the availability of essential medicines at public health facilities in Jur River County, South Sudan

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Submitted: November 2022
Accepted: March 2023
Published: May 2023

Citation: Ajingdit et al., Cross-sectional study on the availability of essential medicines at public health facilities in Jur River County, South Sudan, South Sudan Medical Journal, 2023;16(2):45-49

DOI: https://dx.doi.org/10.4314/ssmj.v16i2.2

ABSTRACT

Introduction: The availability of essential medicines in health facilities in Jur River County (JRC), South Sudan, is below expectations. This is despite the requirement that all citizens should be provided with adequate quality health care services. The objective of the study was to assess the availability of essential medicines and inventory management practices in JRC.

Method: This was a cross sectional study conducted in 31 of the 51 health facilities in JRC. These were 23 primary health care units (PHCUs) and eight primary health care centres (PHCCs). Data were collected using a structured questionnaire, logistics management information system (LMIS) data reports and checklist forms. All the completed checklists and questionnaires were analysed using IBM SPSS statistics version 20.0 and LMIS data was analysed using excel spreadsheet.

Results: The main findings were stockouts and overstocking of essential medicines, low skilled health workers (HWs) and ineffective rotation of medicines in the health facilities. From January – August 2021, the stockouts of essential medicines in PHCUs and PHCCs were 44% and 34% respectively, whereas the incidences of over stockings were 22% and 31% respectively. Almost all (97%) of the health facilities kept records of essential medicines, revealing stockouts of 90.3% on the day of the visit. Of the 31 HWs interviewed 23 (74.9%) were community health workers (CHWs), four (12.9%) nurses and four (12.9%) pharmacy technicians; most (87.1%) had attained secondary education.

Conclusion: The quantities of essential medicines were inadequate and able to cover only two months. The major reasons were inadequate supply of essential medicines; recruitment of CHWs and nurses, instead of pharmacy technicians in the management of supplies; ineffective rotation of medicines within and other health facilities. More research is needed on the factors affecting the availability of medicines at the health facilities in JRC.

Keywords: essential medicine, inventory management, stockout, overstock, South Sudan

INTRODUCTION

Access to medicines is a global problem due to rising prices. This affects the ability of health systems to provide full and affordable healthcare. With the persisting problems of shortages and stockouts of essential medicines for communicable and non-communicable diseases, there are increasing numbers of substandard and counterfeit medicinal products posing a serious risk to the public.[1,2] These issues of substandard and counterfeit products and shortages of essential medicines are expensive for health systems to manage, with additional costs for the replacement of medicines and absorbing significant workers' time. Also, shortages of essential medicines have been reported in high, middle, and low-income countries.[2]

Medicine shortages risk patients' health, as a result of non-treatment, under-treatment, and treatment errors from attempts to substitute missing medicines. The majority of essential medicines including common antibiotics, analgesics, antihypertensives, emergency medicines, and paediatric formulations are often out of stock at health facilities.[3]

In African countries progress toward Universal Health Coverage (UHC) has been slow. The Abuja Declaration (2001)[3] urged all state members to allocate 15% of the national budget to the healthcare system. In South Sudan, the national budget for healthcare services is less than 2%.[1]

In South Sudan, health services are delivered through a five-tier system composed of PHCUs (boma level), PHCCs (payam level), a county hospital (county level), a state hospital (state level, and a referral hospital (national level). At the village level, care is provided by a set of community volunteers led by CHWs and community midwives (CMWs) through the Boma Health Initiative (BHI). There is no county hospital in JRC.

The leading health problems for all age groups across the states are communicable diseases such as malaria, typhoid, pneumonia, and diarrhoea.[1,4] Information about healthcare services and disease prevention is mainly provided by CHWs and community leaders. Shortage of essential medicines as well as shortages in personnel and their inadequate skills were major challenges in health facilities in 2020.[1]

According to the basic package of health and nutrition (BPHN) service in primary health care, a PHCU should be staffed by two CHWs, a vaccinator, and a community midwife who provide basic preventive and curative services. A PHCC offers a wider range of diagnostic and curative services, consists of laboratory diagnostic and an indoor observation ward, provides treatment of simple cases and basic emergency obstetric and neonatal care, and should be staffed with clinical officers, trained nurses, midwives, laboratory and pharmacy technicians, public health officers, vaccinators, and CHWs (See Basic package of health and nutrition service in primary health care) There are usually about four PHCUs for each PHCC.

This study assessed the availability of essential medicines and inventory management practices at PHCCs and PHCUs in JRC, one of the three administrative counties in Western Bahr el Ghazal State, South Sudan.

METHOD

This descriptive cross-sectional study was conducted in 31 of the 51 health facilities in JRC. These were 23 PHCUs and eight PHCCs.

Data were collected in August 2021 from available records on the availability of essential medicines and use of LMIS tools at health facilities, and the socio-demographic characteristics of the HWs responsible for managing the medicines.

The study tools included a structured questionnaire, a checklist, and LMIS data reports. The questionnaire was used to collect data on inventory management practices from the participants such as the availability and use of LMIS tools; education level, skills, and job titles of participants; frequency of supply delivery; stockouts period of essential medicines, and cost-sharing from the patients in the health facilities.

A checklist form of twenty-four essential medicines based on the essential medicine list (EML) for the primary healthcare service was used to assess the availability of essential medicines. The same checklist was used for selecting essential medicines from the LMIS reports of January-August 2021. From the LMIS data, the average monthly consumption (AMC) of each essential medicine for individual PHCUs and PHCCs was calculated. Stock status at each health facility per month was analysed separately.

The AMC of each essential medicine per health facility of all PHCUs and PHCCs was combined to analyse the cumulative stock at hand per the report from January-August 2021. The stock min-max level (3-6 months) was determined and the months of stock (MoS) were calculated by dividing the stock at hand by the AMC to give the number of months the stock at hand would last in the health facility.

At a pre-arranged time, the researcher visited the health facilities, selected the health workers responsible for managing the medicines, and, following their consent, asked them the questions in the questionnaire. The stock levels of tracer medicines listed in the checklist form were then assessed. The LMIS monthly pharmacy reports were collected from the logistics management unit for analysis.

Table 1. Percentage of stockout for all PHCUs and PHCCs January-August, 2021

S/No	Months	Facility	Stockout %	Understock %	Overstock %	Normal %	Comments
1	January to August	PHCUs	44	17	22	17	Last 2 months C13, for period of C14 and first 2 months of C15
		PHCCs	34	16	31	19	

Table 2. Percentage stockouts per month from January-August 2021

S/No	Months	Facility	Stockout %	Understock %	Overstock %	Normal %	Comments
1	January	PHCU	37	35	13	15	Pre-Consignment (C14)
		PHCC	49	25	12	14	
2	February	PHCU	50	25	13	12	
		PHCC	56	18	10	16	
3	March	PHCU	15	27	27	31	Period of Consignment (C14)
		PHCC	14	30	24	31	
4	April	PHCU	30	35	18	17	
		PHCC	20	41	24	15	
5	May	PHCU	38	32	17	13	
		PHCC	22	37	21	20	
6	June	PHCU	50	28	13	9	
		PHCC	40	30	14	16	
7	July	PHCU	57	22	15	6	Post-Consignment (C14)
		PHCC	56	19	16	9	
8	August	PHCU	9	40	28	23	
		PHCC	4	35	29	32	

All completed checklists and questionnaires were analysed using SPSS version 20 and LMIS data was analysed using an excel spreadsheet.

RESULTS

Availability of essential medicines in the health facilities

Of the 31 HWs interviewed in the 31 HF, 23 (74.2%) were CHWs, four (12.9%) nurses, and four (12.9%) pharmacy technicians.

Assessment of the availability of essential medicines was based on three parameters: a checklist on the day of the visit, stock card records, and LMIS reports. On the day of the visit, all the essential medicines were available because the assessment was conducted one month after the delivery of supplies to the health facilities. In contrast, the stock card records in the facilities revealed the stockouts (90.3%) shown in Table 1.

In the LMIS reports, the AMC of the tracer medicines was computed for each category of health facility (PHCUs and PHCCs). The most consumed products were paracetamol, amoxicillin, ferrous sulphate, metronidazole, artesunate+ amodiaquine, and malaria RDT (rapid diagnostic test).

MoS of all PHCUs and PHCCs was calculated by dividing the stock at hand by the AMC. The MoS was classified into stockout (0/<1 month), understock (>1/<3 months), optimal/normal (3-6 months), and overstock (>6 months). The individual stockout of every essential medicine in the health facilities per month in the period of January-August 2021 was calculated.

Most essential medicines were out of stock throughout January-August 2021. The commodities with higher stockouts included malaria RDTs, azithromycin 500 mg tablet, azithromycin 200 mg suspension, amoxicillin dry powder, ciprofloxacin 500 mg tablet, paracetamol 250 mg syrup, metronidazole 200 mg suspension, artesunate + amodiaquine 100/270 mg tablet (adult), diclofenac 25 mg tablet and vitamin A.

In general, health facilities experienced stockouts and/ or under-stocked in most of the months per delivered consignment. In the period of January-August 2021, stockouts and under-stocks were higher in January, February, June, and July. In addition, there was overstocking of some medicines throughout the period as shown in Table 2.

January and February were the last two months of the consignment 13 (C13) delivery. March, April, May, and June were the full period of four months of consignment 14 (C14) whereas July and August were the first two months of consignment 15 (C15).

In the period January-August 2021, the stock levels in PHCUs included stockouts (44%), under stocks (17%), overstocking (22%) and normal (17%), whereas in PHCCs the scenario was stockouts (34%), under stocks (16%), overstock (31%) and normal (19%) Table 1.

Inventory management practices in health facilities

Table 3. Availability of essential tools in health facilities

Type of tools	n (%)
Essential Medicine List Form	1 (3.2)
Standard Treatment Guideline	28 (90.3)
Standard Prescription Forms	8 (25.7)
Drugs Dispensing Bags	2 (6.5)
Dispensing Equipment (tray, counter, spoon)	30 (96.8)

Table 4. Assessment of inventory and record keeping

Variables	n (%)
Health facility keeping records	30 (96.8)
Health facility keeping LMIS documents in secure location	30 (96.8)
Stock cards place next on products	29 (93.5)
Consignments received quarterly	31 (100.0)
Health facility received expected consignment	31 (100.0)
Number of stockout items before the last consignment known	28 (90.3)
Health workers attended on job training in the last three months	31 (100.0)

Assessment on the availability of essential tools in health facilities showed that the most common documents were standard treatment guidelines (90.3%) and standard prescription forms (25.7%) as shown in Table 3.

In addition, some of the records used included ordering and receiving forms, dispensing registers, correctly filled stock card, copies of waybills, copies of issued receipts, correctly filled vouchers, and copies of reporting and requisition forms.

An assessment for the inventory and recording was done (Table 4). Most (96.8%) of health facilities kept records. These included availability and use of LMIS documents (96.8%), stock cards (93.5%), consignment received quarterly (100%), expected consignment received (100%), number of stockouts of tracer medicines before the last consignment (90.3%). Table 4 also shows that all the participants had attended on job training in last three months.

DISCUSSION

The study showed that there were stockouts and overstocking of essential medicines and low skills of HWs in the management of medicines. Recruitment of CHWs and nurses with insufficient skills in PHCUs and PHCCs, based on the BPHN for primary healthcare of South Sudan, has an effect on the management of medicines in the health facilities.

These situations compromise the right of people to receive adequate healthcare services.[3,5,6] Stockouts of quinine, azithromycin, metronidazole, amoxicillin, and paracetamol in health facilities were troubling because the area has a high incidence of infectious diseases. A previous study reveals the high mortality from malaria, typhoid, respiratory infection and/or diarrhoea in JRC and across the states of South Sudan.[1] These findings were contrary to the previous studies which suggest that the barrier to accessibility in primary healthcare is the transportation costs[1,7] because in JRC, medicines and health supplies are distributed immediately once the supplies reached the county medical store through the last mile distribution (LMD) plan, introduced in South Sudan in 2019.

The major reason contributing to the shortage and overstocking of essential medicines in some health facilities may be the inadequate distribution of the supplies regardless of the population size and disease pattern in the health facilities.

Adequate human resources and professional skills are essential in promoting supply chain management and rational use of medicines in health facilities.[1,2] Inadequate skills of the HWs managing medicines contributed to the problems detected in health facilities.

CONCLUSION

The quantities of essential medicines were inadequate and covered only the consumption of two months. There were stockouts and overstocking of essential medicines throughout the period of January -August 2021. The main reasons were inadequate supply of essential medicines, recruitment of HWs with inadequate skills in management of the supplies, and ineffective rotation of medicines in health facilities.

The MoH should review the allocated quantities of essential medicines, recruit more pharmacy technicians to manage the supplies, emphasise the rotation policy of the low moving medicines (overstocking) within/or to other health facilities, and improve capacity building of the HWs (storekeepers, dispensers and prescribers) on supply chain management and rational use of medicines. Finally, further research is needed into the factors challenging availability of medicines and inventory of the health facilities in JRC.

Ethical approval and consent for the participation: Research approval letter was issued from of Research Ethical Review Committee, Directorate of Planning, Budgeting and Research, Ministry of Health, South Sudan. Data were collected after obtaining consent from the participants and preserved with confidentiality.

Availability of data and materials: All can be requested from the first author.

Competing interests: None

Funding of the study: The authors gratefully acknowledge the funding of the Master's of Health Supply Chain Management by the German Federal Ministry for Economic Cooperation and Development (BMZ) through KfW Development Bank and the East African Community Regional Center of Excellence for Vaccines, Immunization, and Health Supply Chain Management. This research would not have been possible without the assistance of the College of Medicine and Health Sciences, University of Rwanda.

Acknowledgements: The authors thank the data collectors and the healthcare staff and managers of the health facilities in JRC.

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Prevalence and predictors of resistant hypertension among out-patients in Ilorin, Nigeria

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Submitted: November 2022
Accepted: February 2023
Published: May 2023

Citation: Ogunmodede and Agede, Prevalence and predictors of resistant hypertension among out-patients in Ilorin, Nigeria, South Sudan Medical Journal, 2023;16(2):50-54 DOI: https://dx.doi.org/10.4314/ssmj.v16i2.3

ABSTRACT

Introduction: Systemic hypertension (SH) contributes the highest number of deaths from cardiovascular diseases worldwide. Patients with resistant hypertension (RH) are more prone to hypertension-mediated organ damage. RH has not been well-studied in Africa, despite the fact that the prevalence of SH is highest in Africa. The aim of the study was to establish the prevalence and predictors of RH among out-patients managed in the cardiology unit of the University of Ilorin Teaching Hospital, Ilorin, Nigeria.

Method: A cross-sectional study of 201 patients selected via systematic random sampling between April and September 2019.

Results: Mean age of the participants was 59.6 (SD 13.8) years, females 58.7%, 32.3% were non-obese, 17 (8.5%) consumed alcohol and three (1.5%) smoked tobacco. 30 participants (14.9%) had co-morbid diabetes mellitus. Systolic blood pressure (SBP) and diastolic blood pressure (DBP) were significantly higher among patients with RH 152.5 (SD 18) mmHg vs 131.9 (SD 18.4) mmHg (p<0.001) and 89.43 (SD 13.8) mmHg vs 79.46 (SD 10.5) mmHg (p=0.008). Eighteen patients (8.96%, 95% CI: 5.5-14%) had RH. The predictors of RH were obesity (OR= 3.754; p=0.009), SBP at patients' first clinic visit, (OR=1.029, p=0.032), DBP at patients' first clinic visit, (OR=1.048, p=0.014), and serum phosphorus, (OR=1.047, p=0.047).

Conclusion: The prevalence of RH among our patients is low and is similar to that in studies with similar blood pressure cut-off values and case definition.

Keywords: resistant hypertension; predictors; obesity; serum phosphorus; systolic blood pressure; diastolic blood pressure

INTRODUCTION

Systemic hypertension (SH) accounts for the highest number of deaths from cardiovascular diseases worldwide. With a prevalence of about 30% among hypertensives,[1] Africa bears a considerable burden of hypertension compared to elsewhere. Awareness, treatment, and control are low.[2,3] Despite the availability of a broader range of antihypertensive medications and increasing awareness of the dangers of hypertension, control is achieved in only about 50%[4] and as low as 33% in some places outside Africa.[5]

Resistant hypertension (RH) refers to uncontrolled blood pressure (BP) despite the concurrent use of three antihypertensive drugs, including a diuretic, prescribed at optimally tolerated dosages with the exclusion of pseudo-hypertension, white coat hypertension and non-adherence to medications. It also includes patients whose blood pressures are controlled but with four or more antihypertensive medications, including a diuretic prescribed at an optimally tolerated dosage.[6,7,8]

African studies on RH are few. Even fewer studies are capturing the burden of RH in the African setting.[9,10] Despite being the region with the highest burden

of SH, the prevalence of RH may also, in like fashion, be very high.

The objectives of this study were to establish the prevalence of RH among patients managed in the outpatient medical clinics of our hospital and identify factors associated with the development of RH.

METHOD

This cross-sectional study was conducted in the cardiology clinic of University of Ilorin Teaching Hospital (UITH) Ilorin, north-central Nigeria. We defined the study population as the estimated 6 monthly attendance of hypertensives at the clinic (406) and used Yamane's formula[11] to determine the sample size (201). We therefore sampled every second patient aged 18 years or more.

Informed consent was obtained from eligible patients and ethical approval from the Department of Medicine. The research was done according to the principles of the Helsinki declaration.[12]

Data was collected between June 1 and November 30, 2019. Adherence to treatment was assessed using 8-item Morisky Medication Adherence Scale which had been used in a previous study.[13] The score was given on an ordinal scale: 8 indicating a high level of adherence, 6 to <8, medium and <6 low adherence. Participants were considered to have RH when they had medium or high levels of medication adherence in addition to standard criteria.[14]

The BP was measured three times using a mercury sphygmomanometer and an appropriately sized BP cuff. The first measurement was performed after participants had rested, seated for five minutes with a 60-second interval between readings. The average of the three measurements was calculated. Controlled BP was defined as SBP <140 mmHg and DBP <90 mmHg.[15] Obesity was defined as BMI values ≥ 30kg/m2, estimated glomerular filtration rate (eGRF) from the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) formula.[14]

Data was analysed using SPSS software version 22. Patients' characteristics were summarized into means or medians for continuous data and categorical variables as percentages. Chi-square tests and Student's independent t-tests were used to test for associations between categorical and normally distributed continuous variables respectively and the presence or otherwise of RH. Mann–Whitney U test was used to compare medians of skewed variables. A binary logistic regression was performed to ascertain the predictors of RH among the patients. The variables that showed a significant association with the presence of RH were inputted into the regression model. Statistical significance was set at $p < 0.05$.

RESULTS

The mean age of the participants was 59.6 (SD13.8) years. There were 118 (58.7%) females, 65 were obese (32.3%, p=0.006), 17 (8.5%) consumed alcohol and 3 (1.5%) smoked tobacco. Other socio-demographic parameters are in Table 1. Table 2 shows that the mean SBP, DBP,

Table 1. Socio-demographic variables of study participants

	All patients	Patients without RH	Patients with RH	
	Mean [SD]/ Median (IQR)/Frequency (%)	Mean [SD]/ Median (IQR)/Frequency (%)	Mean [SD]/ Median (IQR)/Frequency (%)	p-value
	201	183 (91.04)	18(8.96)	
Age	59.58 [13.77]	59.52 [13.8]	60.21 [13.9]	0.845
Gender: Male	83 (41.3)	72 (86.7)	11 (13.3)	
Female	118 (58.7)	111 (94.1)	7 (5.9)	0.074
Obese	65 (32.3)	54 (83.1)	11 (16.9)	
Alcohol intake	17 (8.5)	17 (100.0)	0 (0.0)	0.177
Smoking	3 (1.5)	3 (100.0)	0 (0.0)	0.584
Coexisting DM				
Yes	30 (14.9)	27 (90)	3 (10)	0.828
Family History of Hypertension				
Yes	92 (45.7)	81 (88.9)	11 (11.1)	0.383
Duration of Hypertension diagnosis (years)				
Yes	7 (2-15)	7 (2-13)	7 (2-15)	0.968

Table 2. Comparison of clinical and laboratory variables of participants with and without resistant hypertension

	All patients Mean [SD]	Patients without RH Mean [SD]	Patients with RH Mean [SD]	p-value
Current Systolic BP (mmHg)	133.7 [19.3]	131.9 [18.4]	152.5 [18]	**<0.001***
Current Diastolic BP (mmHg)	80.4 [11.1]	79.46 [10.5]	89.4 [13.8]	**0.008***
Systolic BP on first clinic visit (mmHg)	143.3 [18.8]	142.4 [18.5]	152.4 [19.6]	**0.030***
Diastolic BP on first clinic visit (mmHg)	87.3 [13.4]	86.5 [13.3]	94.8 [13.1]	**0.013***
Serum Sodium (mmol/l)	139.6 [18.7]	137.8 [4.6]	139.7 [3.3]	0.093
Serum Potassium (mmol/l)	3.6 [0.6]	3.6 [0.6]	3.5 [0.7]	0.549
Serum Urea (mmol/l)	4.4 [1.9]	4.4 [1.9]	4.9 [2.4]	0.459
Serum Creatinine (µmol/l)	88.7 [29.6]	88.7 [29.2]	92.6 [24.9]	0.652
eGFR (ml/min/1.73m2)	74.5 [24.4]	74.6 [24.6]	74.3 [27.1]	0.968
Serum Calcium (mmol/l)	2.4 [0.5]	2.3 [0.28]	2.6 [0.14]	**<0.001***
Serum Phosphate (mmol/l)	**1.6 [1.3]**	1.2 [0.46]	1.96 [0.4]	**0.012***
Serum TCHOL (mmol/l)	5.1 [1.3]	5.1 [1.40]	4.3 [1.1]	0.071
Serum HDL (mmol/l)	1.1 [0.4]	1.1 [0.42]	0.4 [0.4]	0.063
Serum LDL (mmol/l)	4.1 [5.2]	3.6 [1.3]	3.1 [1.1]	0.358
Serum Triglyceride (mmol/l)	1.47 [0.5]	1.21 [0.5]	1.37 [0.4]	0.374

eGFR- Estimated Glomerular Filtration Rate; TCHOL- Total cholesterol; HDL- High Density Lipoprotein; LDL- Low Density Lipoprotein.

serum calcium and phosphate were significantly higher among patients with RH p<0.001, p=0.008, p<0.001, p<0.001 and p=0.012 respectively. The prevalence of DM and family history of SH were similar in patients with and without RH.

The BP of 37 patients (18.5%) was controlled with four or more antihypertensive drugs or were on three drugs without achieving BP control. Among these, 11 (5.5%) were poorly adherent to medications, three (1.5%) were not on diuretics and five (2.5%) were not on maximum doses of antihypertensive drugs. Only 18 subjects (8.96%, 95% CI: 5.5-14%) had RH in this study.

The predictors of RH were obesity (OR=3.754; p =0.009), SBP at patients' first clinic visit, (OR=1.029, p=0.032), DBP at patients' first clinic visit, (OR=1.048, p= 0.014), and serum phosphorus (OR=2.414, p =0.047) (see Table 3).

DISCUSSION

The prevalence of RH of 8.96% in this study is at variance from the rest of Africa where rates range from 5–30%. [7,15] In a meta-analysis of studies of RH over a 28-year period, out of the 91 studies found, only five were done in Africa.[9,15]

The varying rates of RH arise from inconsistent methodology, sample size, BP cut-off values for RH, and consideration of adherence to medication.[10,16-17] In an Ibadan, Nigeria, study 5% had RH.[16] However, individuals with poor medication adherence (about half of the study participants) were not excluded from those adjudged to have RH. The finding of 7.3% in an Algerian study[17] is comparable with ours because patients with poor compliance were excluded. Compared to the rest of the world, the prevalence of RH in our study, though higher than the 5% reported in France[18], is less than the pooled data of 10.3% reported in the general population of 3.2 million hypertensives in a meta-analysis by Noubiap et al.[15]

The association between obesity and RH has been reported previously in Africa.[20] The renin-angiotensin-aldosterone pathway is enhanced in obese individuals[19] and there is a greater inhibition of the natriuretic peptide system, blunting beneficial vasodilatation and natriuresis.

This study found that the initial BP at first clinic visit was significantly higher in patients who had RH, a finding also reported by the Antihypertensive and Lipid-Lowering and Treatment to Prevent Heart Attack investigators.[20] This suggests that patient-related factors which predispose to treatment resistance may bestow patients with higher BP values from the onset of the disease. The finding that serum phosphate was significantly lower in the patients with RH agrees with that of Alonso et al[21] although the mechanism is obscure but differs from that of Patel et al.[22] Serum calcium is higher in our patients with RH. Higher serum total calcium levels were positively

Table 3. Predictors of resistant hypertension by binary logistic regression

		β	p-value	Odds ratio	95% CI	
					Lower	Upper
Obesity	Not Obese [Ref]	1.323	0.009*	3.754	1.382	10.20
	Obese					
Systolic BP at first clinic visit		0.028	0.032*	1.029	1.002	1.056
Diastolic BP at first clinic visit		0.047	0.014*	1.048	1.009	1.089
Serum Phosphorus		3.184	0.047*	2.414	1.047	556.5
Serum Calcium		4.812	0.175	123.027	0.118	127.5
eGFR		-0.001	0.965	0.999	0.973	1.026

eGFR- Estimated Glomerular Filtration Rate.

associated with hypertension in a large sample of United States adults. However, in our study, it was not predictive of RH probably due to our relatively small sample size.[23]

Our study is limited by sample size and non-usage of ambulatory BP monitoring (ABPM) facilities which are limited. Judd and Calhoun[7] have suggested that RH, identified in the absence of ABPM, might be misclassified as having RH.

CONCLUSION

Our study confirms a variation in prevalence of RH among African hypertensive patients and reports a prevalence similar to studies with the same BP cut-off values and case definition. Our study contributes to defining the burden of RH in the Africa and is important for designing strategies to achieve better BP control.

Conflicts of interest: None

Sources of funding: Self

Acknowledgement: Authors acknowledge Mr Medubi for his editorial assistance

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Prostate cancer in patients with suspected benign prostate hypertrophy in Juba, South Sudan: A retrospective study

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Submitted: March 2023
Accepted: March 2023
Published: May 2023

Citation: Aguer et al. Prostate cancer in patients with suspected benign prostate hypertrophy in Juba, South Sudan: A retrospective study, South Sudan Medical Journal, 2023;16(2):55-59 DOI: https://dx.doi.org/10.4314/ssmj.v16i2.4

ABSTRACT

Introduction: Prostate cancer carries a high morbidity and mortality especially when not diagnosed early. Patients in resource limited countries tend to be diagnosed late and hence delayed surgery for benign prostate hypertrophy (BPH).

Method: This was a retrospective study, from 1st January 2019 to 31st December 2020, on patients who underwent prostatectomy. Demographic and clinical data were extracted from their medical records.

Results: This study involved 101 patients who had had simple open prostatectomy. Ages ranged from 49 to 98 years, mean 68 +/- 8.98 years. The largest group (37.6%) was aged 71- 80 years, p=0.001. Two thirds (66%), presented with urinary retention, p=0.03. Histopathological examination showed that 49.5% had BPH. Prostate cancer was found in 28.8%, p=0.082. Almost half (49.5%) were diagnosed histopathologically as having BPH. Prostate cancer made up 28.8% with most patients in the age range 61-80 years, p= 0.456.

Conclusion: The prevalence of prostate cancer remains high among patients undergoing prostatectomy for suspected BPH. A national awareness campaign coupled with targeted screening of patients above 40 years could increase early detection of prostate cancer and reduce morbidity and mortality.

Keywords: Benign prostate hypertrophy, histopathology, prostate cancer, Juba Teaching Hospital

INTRODUCTION

Globally prostate cancer, an adenocarcinoma, is an increasingly important health burden. It is estimated that 0.9 million cases and 0.26 million deaths from prostate cancer occur annually.[1] It is the second leading cancer in men and the fifth cause of malignancy worldwide.[2] Nevertheless, there is a broad variation of prostate cancer occurrence in developed countries with 180,890 new cases recorded in USA, and with 26,120 deaths in 2016 as the highest.[2]

Studies indicate a rising incidence of prostate cancer in low- and middle-income countries especially in Africa.[3] In Africa, this malignancy is the leading cancer in both incidence and mortality: 13% of all male cancers and 11.3 % of all male cancer-associated mortalities.[1] Reported incidence among African American men is among the highest but African data are unclear. A literature reviewcompared data from Africans and African Americans and found that rates were highest in the East Africa, 10.7-38.1 per 100,000 male-years and lowest in the West Africa, 4.7-19.8 per 100,000 per male-years.[4] It has been observed that rates increased between 1987 and 2002.[3] This may be due to variation in access to medical services, screening programmes, registry quality, genetic diversity, and western life style[4] among the Africans and African Americans. Other studies

have recorded new cases increasing from 15% (1970) to 56% (2008) and predicting 70% by 2030.[3]

Most studies in sub-Saharan Africa are hospital based. It has been indicated, in one case-controlled study from South Africa that prostate cancer was associated with a high intake of meat, fat, eggs, eating outside the house and low consumption of vegetables.[5] If these associations were confirmed as real risks there follows a possibility of reducing prostate cancer by cutting down high fatty foods, increasing intake of vegetables and fruits as well as increasing exercise.[6] But there are challenges with prostate cancer management especially with late presentations.[7] Furthermore, clinical diagnosis of prostate cancer is difficult as the presentation is often like BPH. Even though ultrasound, CT and MRI scanning play useful role in diagnosis, Prostatic Specific Antigen (PSA) has a better predictive value.[8] Many prostate cancers are detected by determining the plasma levels of PSA more than 4 ng/mL.[6] Nevertheless, men without cancer have also been found with elevated PSA, and therefore a tissue biopsy is usually needed to confirm the diagnosis.[6]

Prostate cancer is graded using the Gleason Score[9] that categorises cancerous cells into five distinct patterns. The grading scale ranges from 1 to 5 in which cells closer to 5 are considered high grade.

In 2014, the International Society of Urological Pathology produced a revised prostate cancer grading system known as the Grade Groups. It is very simple in which there are 5 grades ranging from 1 to 5. It comprises of a risk group, grade group and Gleason Score. The risk group is determined by measurements that include PSA level, clinical tumour stage (T-stage), and number of positive biopsy cores. (Table 1).

This Grade Group system was adopted by the WHO Classification of Tumours and Male Genital Organs in 2016.[10] In 2019 it was agreed to modify the Gleason patterns 4 and 5 to include invasive cribriform carcinoma, intraductal carcinoma and multiparametric MRI targeted biopsies.

There seems to be no hospital-based study published about prostate cancer in South Sudan. WHO reported prostate cancer, in South Sudan, as the third most prevalent cancer and the fifth in terms of cause of death.[11]

The aim of this study was to define the magnitude of the prostate cancer problem among patients attending a tertiary surgical service in South Sudan and to make recommendations to policy makers.

METHOD

This retrospective study was carried out at Juba Teaching Hospital (JTH), department of Surgery. It has a catchment area within, and outside, Juba City with a population of 440,000 people. The data were extracted from the surgical records and statistical department (1st January 2019 to 31st December 2020). The patients were usually referred from secondary level hospitals, health centres and private clinics. They presented with obstructive prostatic enlargement or incidentally detected by pelvic ultrasound. The PSA was measured when malignant prostatic enlargement was suspected. Most patients with presumed BPH underwent open prostatectomy. The specimens were sent for histopathological analysis and those found to have prostatic carcinoma underwent hormonal management.

Data were collected from males aged forty years and above who presented with urinary retention or otherwise found to have prostatic enlargement. Patients with known prostate cancer were excluded.

The study utilized a stratified random sampling method. A minimum sample size of 101 patients was estimated from the population of 720,000 patients seen yearly in the surgical department. The following formula used to calculate the sample size:

$$n = \frac{N}{1 + N (e) 2}$$

Whereby:

n= Sample size

N= Targeted population

e= Level of precision or confidence interval i.e., 10%

$$n = \frac{720000}{1 + 720000 (0.1)2}$$

n =1 + 100

= 101 samples

Table 1. Grade Groups system

Risk Group	Grade Group	Gleason Score
Low/Very Low	Grade Group 1	Gleason Score less or equal 6
Intermediate	Grade Group 2	Gleason Score 7 (3+4)
(Favourable/Unfavourable)	Grade Group 3	Gleason Score 7 (3+4)
High/Very High	Grade Group 4	Gleason Score 8
	Grade Group 5	Gleason 9-10

The data were cleaned by removing data with missing variables in an excel spreadsheet and transferred into SPSS version 21, IBM. Chi-square was used to determine associations between the variables and any result with p<0.05 was considered statistically significant.

Ethical approval was obtained from the Ethical Review Committee of the National Ministry of Health, Republic of South Sudan.

RESULTS

This study involved 101 patients who were diagnosed with presumed BPH and who underwent open prostatectomy. Their ages ranged from 49 to 98 years, mean 68 +/- 9 years. The largest group (37.6%) was aged 71-80 years (Table 2).

Two thirds (66%) presented with urinary retention. Based on the histopathological findings 49.5% had BPH and 28.8% had prostate cancer at various stages with ages ranging from 61-80 years, p= 0.456 as shown in Table 3.

DISCUSSION

The incidence rates of prostate cancer are increasing, particularly in limited resource countries like South Sudan. A pooled study from the African Cancer Registry Network.[12] showed a significant rise in prostate cancer incidence in sub-Saharan Africa. More studies are needed to clarify the situation.

Table 2. Distribution of patients according to their age groups, presentation at hospital and their histopathological diagnosis.

Variable	Frequency n (%)	p value
Age group (years)		
41-50	1 (1.0)	
51-60	13 (12.9)	
61-70	36 (35.6)	
71-80	38 (37.6)	
81-90	11 (10.9)	
>90	2 (2.0)	0.001
Histopathological diagnosis		
BPH	50 (49.5)	
BPH with HGPIN	9 (8.9)	
BPH with basal cell hyperplasia	7 (6.9)	
BPH with squamous metaplasia	1(1.0)	
BPH with atrophy	3 (3.0)	
BPH with adenosis	1 (1.0)	
Prostate cancer	29 (28.8)	
Others	1 (1.0)	
Total	**101 (100.0)**	**0.082**

Table 3. Distribution of histopathology diagnosis against the age groups of patients

Histopathological Diagnosis	Age group n (%)						Total n (%)
	41-50yrs	51-60yrs	61-70yrs	71-80yrs	81-90yrs	>90yrs	
BPH	0(0)	10(20)	17(34)	15(30)	7(14)	1(2)	50(49.5)
BPH with HGPIN*	0(0)	0(0)	2(22)	6(67)	0(0)	1(11)	9(8.9)
BPH with basal cell hyperplasia	0(0)	1(14)	0(0)	4(57)	2(29)	0(0)	7(6.7)
BPH with squamous metaplasia	0(0)	0(0)	1(100)	0(0)	0(0)	0(0)	1(1)
BPH with atrophy	0(0)	0(0)	3(100)	0(0)	0(0)	0(0)	3(3)
BPH with adenosis	0(0)	0(0)	1(100)	0(0)	0(0)	0(0)	1(1)
Prostate cancer	1(3.4)	2(6.9)	11(37.9)	13(44.8)	2(6.9)	0(0)	29(28.7)
Others	0(0)	0(0)	1(100)	0(0)	0(0)	0(0)	1(1)
Total							**101**

p=0.456

**High-grade Prostatic Intraepithelial Neoplasia*

The cause of the increasing incidence of prostate cancer in Eastern Africa is multifactorial with improvement in the record keeping within health systems being a key factor. The commonest presentation is with urinary retention but chronic urine tract infection also occurred. The prevalence of BPH in sub-Saharan Africa varies from 12% to 42%.[13]

Our finding (49.5%) was higher probably because the study was hospital based. BPH is suspected if a patient presents with a lower obstructive uropathy syndrome[14]: nocturia, dysuria, urgency, frequency, difficulty initiating micturition and emptying the bladder, and weak or interrupted stream in absence of urethral stricture.[15] In our study 66% of the patients were diagnosed on the basis of symptoms as having BPH. Our high finding could be due to multiple factors: delayed presentation by patients, poor referral practice, inadequate infrastructure, and qualified health staff. Prostate cancer mostly affects men over 70 years[16] (average age of 74 years). We had a similar finding with the age group 61 to 80 years being most often affected.

CONCLUSION

This study has indicated that prostate cancer is a significant problem especially in men aged 61-80 years. The high prevalence may be attributed to lack of awareness, delayed referral, transport issues, and late diagnosis, poor infrastructure, inadequate qualified health professionals and insecurity.

Limitations

1. This was a single-centred hospital-based study.
2. High cost and scarcity of PSA.
3. Missing patients' data.

RECOMMENDATIONS

1. Creation of a national cancer registry.
2. Development of a national strategic plan for prostate cancer.
3. Development of guidelines for management and health education for prostate cancer.
4. Provision of resources to fund research on prostate and other malignancies.

Conflict of interests: None

Authors contribution: MA developed research from inception, data collection to first draft of the manuscript. KS and JL did the statistical analysis, results formulation, finalization and editing of the manuscript. GN and JT did proof reading of the manuscript. All authors read and approved the final manuscript.

Acknowledgements: We thank the theatre and statistical department staff who facilitated our access to patients' data.

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TB PRACTECAL:

Behind the groundbreaking work to beat an overlooked crisis

Tuberculosis (TB) is often thought of as a disease of the past. However, in 2023, it is still one of the world's top infectious killers. Every year, 10 million people get sick with TB and more than two million die…….

Worryingly, the disease has also become increasingly antibiotic resistant. With a dangerous strain that is unaffected by multiple 'first line' drugs, patients have no other option than a gruelling two-year treatment with severe side effects and only a 50 percent survival rate.

In 2017 MSF launched a ground-breaking clinic trial – TB PRACTECAL – working with communities across multiple countries to find a shorter, safer and more effective treatment for patients with multidrug-resistant TB.

The results of the trial have now been published in medical journals and the new treatment – a combination known as BPaLM – has been recommended by the World Health Organization. As we mark World TB Day on Friday 24 March, MSF is proud of this innovative project that will save lives around the world for years to come.

https://msf.org.uk/video/tb-practecal-behind-groundbreaking-work-beat-overlooked-crisis?utm_source=Frontline_March_2023&utm_campaign=Frontline_2023&cmp=1&utm_medium=Email

Infections and rheumatic diseases

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Submitted: December 2022
Accepted: March 2023
Published: May 2023

ABSTRACT

Infections and rheumatic diseases have shared a close relationship since time immemorial. Some rheumatic diseases are a direct consequence of infections while others have been associated with certain microbes without an established causal link. The above relationship is becoming more and more complex due to rapid advances in therapeutics, and also because of factors such as climate change and worldwide travel. This is a brief review of the major facets of this relationship and demonstrates that clinicians not only have to keep up with all the advances in management of rheumatic diseases but also must remain vigilant about both common as well as opportunistic and unfamiliar infections and their consequences.

INTRODUCTION

Rheumatic diseases are a group of conditions that have an inflammatory basis and are often autoimmune in nature. These could affect the musculoskeletal system as well as other organs, such as lungs, kidneys and skin. Infections and rheumatic diseases have always had an intriguing relationship and that continues to evolve with increasing complexity.[1] Infections could not only cause systemic immune-mediated diseases but also be the most dreaded complication associated with the use of immunosuppressives for treating rheumatic conditions.[2]

INFECTIONS CAUSING RHEUMATIC DISEASES

Several rheumatic diseases develop in response to pathogenic infections. Mechanisms such as molecular mimicry are thought to play a role. Molecular mimicry results from antigenic similarity between molecules found on infectious agents and host tissues.[3] A wide variety of microbes can also cause intra-articular (septic arthritis) or intra-osseous (osteomyelitis) infections but these conditions are not traditionally considered rheumatic in nature. The following are examples of rheumatic diseases caused by infections:

Viral arthritis – Many viruses have been implicated in viral arthritis including parvovirus B19, hepatitis B virus (HBV), hepatitis C virus (HCV), human immunodeficiency virus (HIV), human T cell leukaemia virus (HTLV)-1 and arboviruses. The arboviruses or arthropod-borne viruses are mostly transmitted by mosquitoes and belong to two main groups: alphaviruses (e.g., chikungunya virus) and flaviviruses (e.g., dengue virus). Acute arthralgia and arthritis are well recognised complications of viral infections and 1% of all cases of acute polyarticular arthritis have a viral cause.[4] It is usually self-limiting but highlights the importance of taking a comprehensive travel history.

Reactive arthritis – This is a form of inflammatory arthritis that develops a few weeks after either a sexually acquired (e.g., *Chlamydia trachomatis*) or gut associated (e.g., Campylobacter, Salmonella, Shigella and Yersinia) infection.[5] Reactive arthritis usually resolves spontaneously but if the symptoms persist for more than six months then disease modifying agents such as methotrexate or sulfasalazine should be considered.

Lyme disease - This is caused by *Borrelia burgdorferi* and is transmitted to humans through an infected tick bite. It may start as a red and circular rash around the

Citation: Mukherjee, Infections and Rheumatic Diseases, South Sudan Medical Journal, 2023;16(2):60-63 DOI: https://dx.doi.org/10.4314/ssmj.v16i2.5

site of a bite (erythema migrans – seen in about 70 to 80%) which slowly expands with partial central clearing. The other typical symptoms include fever, headache and fatigue with myalgia and arthralgia. Most patients are treated effectively with antibiotics over a few weeks. In some cases, particularly if left untreated, patients may develop inflammatory arthritis as well as neurological and cardiac problems.[5] The term 'chronic Lyme disease' remains poorly defined and has been controversial. 'Post-treatment Lyme disease syndrome' refers to a number of nonspecific symptoms including fatigue, widespread musculoskeletal pain and cognitive problems that are seen in 5 to 15 per cent of the patients despite antibiotic therapy and, in most cases, these gradually resolve over six to twelve months.

Rheumatic fever – Acute rheumatic fever (ARF) occurs following Group A streptococcal throat infection although emerging evidence suggests this could also be a consequence of streptococcal skin infection. It can affect different organs and joint disease is thought to be the second most common manifestation. Unless ARF is effectively treated, it could lead to chronic rheumatic valvular heart disease.[5]

INFECTIONS CONSIDERED AS POTENTIAL TRIGGER FOR RHEUMATIC DISEASES

Although the exact mechanisms involved in the pathogenesis of classical rheumatic diseases remain mostly unknown, both genetic and environmental factors are thought to play a vital role. An important component of the latter are infections and several mechanisms, other than molecular mimicry, have been proposed. These include epigenetic modifications induced by microorganisms, epitope spreading and pathogen persistence.[3,6,7] The following are examples of rheumatic diseases where infective agents have been implicated as potential triggers:

Rheumatoid arthritis (RA) – This mainly causes pain, swelling and stiffness affecting peripheral joints. Various microorganisms have been associated with the development and persistence of RA. Investigators have reported several immunological, molecular and microbiological findings which suggest *Proteus mirabilis* could play a role in the pathogenesis.[5] Moreover, periodontitis is a well-known risk factor for RA and *Porphyromonas gingivalis*, a gram-negative anaerobe, that commonly causes periodontitis, has also been strongly associated.[6]

Systemic sclerosis (SSc) – This is an uncommon autoimmune disorder that causes hardening of the skin and also affects other internal organs. Molecular mimicry has been thought to play a role during the early phases of SSc and, although several organisms have been implicated, the strongest evidence seems to be in favour of human cytomegalovirus (hCMV) and Epstein Barr virus (EBV).[6]

Axial spondyloarthropathy – This is a rare form of inflammatory arthritis that mainly affects the spine and sacroiliac joints and results in spinal pain and stiffness. Several immunological and microbiological studies have identified evidence that appears to link *Klebsiella pneumoniae* to its development.[5]

Systemic lupus erythematosus (SLE) – This is also a rare autoimmune disease that causes inflammation in skin, joints and other organs. Human endogenous retrovirus (HERV) infection can genetically predispose individuals to SLE while EBV infection is thought to be a trigger for its development.[1]

Sjögren's syndrome (SS) – This is a rare autoimmune disease that presents as dryness of eyes and mouth but may also affect joints, nerves and several other organs. HCV, EBV and HTLV1 have been put forward as potential causative agents in SS.[6]

Vasculitis – These are a group of uncommon autoimmune diseases that cause inflammation of blood vessels and are classified depending upon the size of vessel affected. Nasal carriage of *Staphylococcus aureus* has been linked to granulomatosis with polyangiitis (GPA, previously called Wegener's granulomatosis), a small-to-medium vessel vasculitis. Chronic HCV infection has been implicated in mixed cryoglobulinaemic vasculitis while Henoch-Schönlein purpura has been associated with Group A streptococci and parvovirus B19. Polyarteritis nodosa has also been linked to HBV infection.[6]

INFECTIONS RELATED TO TREATMENT OF RHEUMATIC DISEASES

The last three decades have witnessed a revolution in antirheumatic disease management because of the availability of increasing therapeutic options. These include various biological agents that reduce inflammation by targeting specific cytokines like tumour necrosis factor (TNF), depleting particular subsets of cells, for example B lymphocytes, or blocking T cell co-stimulation. More recently, several small molecules have been introduced and these work by inhibiting intracellular signalling (e.g., Janus Kinase (JAK)-signal transducer and activator of transcription (STAT) pathway).[2] However, all these agents are also associated with adverse effects, particularly the increased risk of infection, both by common and opportunistic pathogens. The following are some examples of the latter:

Mycobacterial infections - Biological agents such as TNF inhibitors are associated with risk of reactivation of latent tuberculosis (TB) infection and that is higher with monoclonal antibodies against TNF (e.g., infliximab) compared to the soluble TNF receptor blocker etanercept.[8] Various national and international organisations have produced guidelines about screening and treatment of latent TB

before initiating biological therapy. There are a limited number of studies looking at the risk of TB reactivation with non-anti-TNF biologics and although the results are reassuring, the British Society for Rheumatology guidance recommends following the same advice as that for anti-TNF agents until more data becomes available. Moreover, non-tuberculous mycobacteria appear to be a greater concern in countries which have a low prevalence of TB.[8]

Herpes Zoster – This results from reactivation of latent *Varicella zoster* virus (VZV) due to reduction in immunity because of aging or immunosuppression and is also known as shingles. Biological agents such as TNF blockers and small molecules like JAK inhibitors have been associated with an increased risk of shingles[8] and vaccination of high-risk population could potentially help to reduce that. The non-live vaccine Shingrix provides very good protection against shingles and postherpetic neuralgia and is an alternative to the live vaccine Zostavax which is contraindicated in immunocompromised patients. The recently published European Alliance of Associations for Rheumatology (EULAR) guidelines recommend that patients who are thought to be non-immune to VZV should be made aware about post-exposure prophylaxis if they come into contact with someone having chickenpox or shingles.[9]

Pneumocystosis – *Pneumocystis jirovecii* pneumonia (PJP) is a fungal opportunistic infection in immunocompromised hosts and has also been seen in autoimmune rheumatic disease patients receiving immunosuppressive therapy.[8] According to EULAR guidelines, PJP prophylaxis appears to be of benefit in patients treated with prednisolone higher than 15–30 mg (or equivalent) daily for more than 2–4 weeks. Concomitant use of other strong immunosuppressants potentially increase that risk but there is a relative lack of data relating to these individual agents.[9]

Progressive multifocal leukoencephalopathy (PML) – This is a rare demyelinating central nervous system infection caused by reactivation of John Cunningham virus and is frequently fatal. It has been reported in rheumatic diseases treated with strong immunosuppressives but the risk seems to higher for SLE patients receiving rituximab.[2]

Reactivation of HBV – The EULAR guidance recommends HBV screening for all rheumatic disease patients being considered for immunosuppressive agents. However, the risk seems to be particularly high for patients with chronic HBV infection and for those treated with rituximab and a hepatology opinion has been recommended in such cases for consideration of prophylactic treatment.[9]

Mucocutaneous candidiasis – Interleukin 17 inhibitors have been associated with an increased risk of mucocutaneous candidiasis. These patients should be closely monitored for that and antifungal prophylaxis might be needed in some circumstances.[10]

Finally, it is important to consider local epidemiology because endemic fungi in USA and Leishmania in Mediterranean countries can cause severe opportunistic infections in patients with rheumatic diseases receiving immunosuppressive treatment.[7]

SPECIAL CONSIDERATIONS

Global warming and climate change – Higher temperatures and increased rainfall facilitate spread of several infections that have rheumatic manifestations, such as vector-borne diseases like dengue and enteric diseases like salmonella.[11] The tick vectors of *Borrelia burgdorferi* have now spread to greater parts of Europe while local transmission of chikungunya has been reported in France and Italy.[12]

International travel and migration – Consequent to huge increases in movement of people between tropical and temperate countries, clinicians can now come across unfamiliar infections. For example, many western countries are now considered to be free of leprosy, a chronic infection caused by *Mycobacterium leprae*, and the diagnosis could be missed unless suspected. This usually presents with skin and neurological involvement but musculoskeletal features are the third most common. These include Charcot's arthropathy, acute as well as chronic symmetrical polyarthritis and tenosynovitis although other rheumatic manifestations such as enthesitis, sacroiliitis and cryoglobulinaemic vasculitis have also been occasionally reported.[13]

Hygiene hypothesis – This postulates that exposure to some infective agents during childhood could provide protection against development of allergic and autoimmune rheumatic diseases in the future. This is based on epidemiological and clinical data which show an increase in prevalence of these conditions in western countries in conjunction with reduced rates of infections. Consequently, there could potentially be an increase in autoimmune rheumatic diseases in some developing countries as they adopt healthier standards of living including access to clean water.

COVID-19 pandemic – The full extent of the relationship between rheumatic diseases and COVID-19 infection remains unclear. An important lesson from the recent pandemic is that rheumatic diseases on their own are associated with only a modest additional risk and the principal factors that determine a poor outcome are active disease, comorbidities including increased age, and use of medications like rituximab and glucocorticoids.[14] It is now clear that hydroxychloroquine is entirely ineffective against COVID-19 infection although anti IL-6 agents like tocilizumab have been shown to improve outcomes in

some patients with severe or critical disease.

Vaccinations - Patients with rheumatic diseases have an increased risk of infections and vaccinations can play a vital role in prevention. However, the immunological response to vaccines can be reduced in those receiving strong immunosuppressive therapy and various strategies including appropriate timing of vaccination have been used to improve efficacy. Moreover, certain vaccines, such as the ones against SARS-COV-2, have been implicated in the development of *de novo* rheumatological conditions as well as disease flares in those with existing illnesses.[15]

CONCLUSION

Infections and rheumatic diseases share a fascinating relationship. Some rheumatic diseases are the consequence of specific infections while others have been associated with several microbial agents although the definitive proof of a causal link in such cases mostly remain elusive. The ever-evolving field of advanced therapeutic options has made it possible to effectively treat a wide range of rheumatological diseases that were previously considered refractory but these agents are also frequently linked to a significant increase in the incidence of common infections as well as to the emergence of potentially life-threatening opportunistic infections. Moreover, external factors such as global warming and migration of people have led to spread of diseases to new geographical locations and clinicians must be vigilant about such unfamiliar infections and their consequences.

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An introduction to assessing clinical skills

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Submitted: March 2023
Accepted: March 2023
Published: May 2023

Citation: Hill and Bregazzi, An introduction to assessing clinical skills. South Sudan Medical Journal, 2023;16(2):64-67 DOI: https://dx.doi.org/10.4314/ssmj.v16i2.6

ABSTRACT

The successful acquisition of clinical skills is essential to development and competence as a clinician. Clinical skills can be assessed in undergraduate education and in the workplace after graduation. Clarity about what is being assessed, and why, should support the development of any assessment process.

Keywords: Clinical skills assessment, workplace-based assessment, objective structured clinical examination.

INTRODUCTION

The assessment of clinical skills occurs in various formats. At medical school we often assess specific skills, for example being able to insert a cannula, using an Objective Structured Clinical Examination (OSCE). In the clinical workplace we assess more complex competencies that require a combination of skills and behaviours. These Workplace Based Assessments (WBA) involve supervisors and other members of the clinical team and use a variety of assessment formats. In this article we introduce some of the principles and approaches to the assessment of clinical skills.

PURPOSE AND PRINCIPLES OF ASSESSMENT

It is helpful for both teachers and learners to understand the purpose and the principles of assessment.

Our initial thoughts should consider what we want to assess, and why. Does an assessment identify current strengths and areas for development, to encourage learning? Or is it to make a judgement on an individual's knowledge or clinical competence at a specific point in time? The first is formative assessment, assessment for learning. A previous article[1] provided suggestions for how you might approach this. The second is summative and is assessment of learning. Summative assessment may include a formative element, by providing feedback to the learner, but this is not always possible.

Whatever the purpose of the assessment, it should be designed to enable the learner to demonstrate that they have achieved the intended learning outcomes. For example, can a learner describe the anatomy of the shoulder, or can they correctly insert a cannula? The approach taken to learning and teaching, the intended learning outcomes, and the assessment process, must align with each other. This is known as constructive alignment.[2]

There are a number of taxonomies available that help us understand the level and complexity of what is required of a performance, and what we intend to assess. Bloom's[3] cognitive taxonomy is often used for writing learning outcomes and examination questions. For assessment of clinical competence Bloom's[3] affective and psychomotor taxonomies may be more appropriate. In addition, there is Miller's[4] pyramid (Figure 1) where learners progress from novice to expert through four levels.

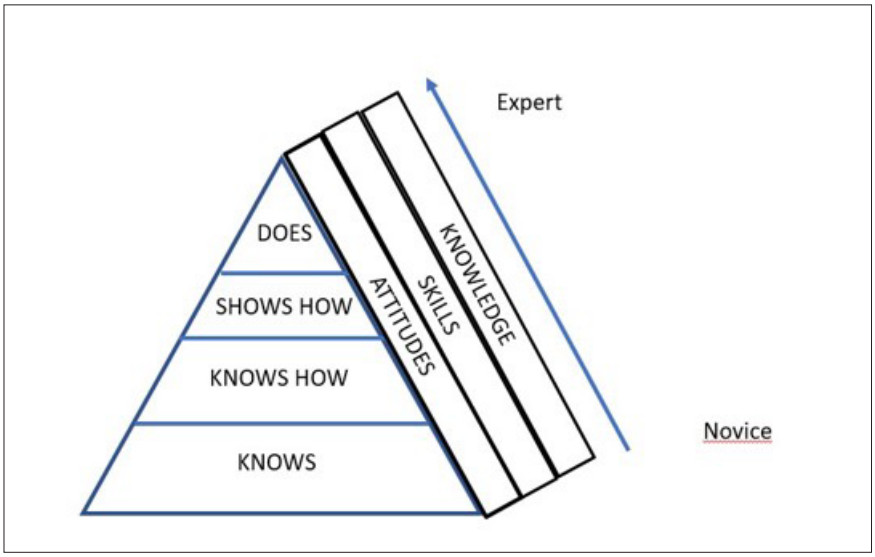

Figure 1. Miller's pyramid[4]

The lower two levels, 'knows' and 'knows how' concern assessment of knowledge; the top two, 'shows how' and 'does', are appropriate for clinical skills assessments.

'Shows how' demonstrates that a learner can carry out a task. This can be assessed using an Objective Structured Clinical Examination (OSCE), a simulation, or a case study. 'Does' involves real life performance. Here, assessment requires observation in practice, often using work-based assessment documents to record the outcome.

Wass and Archer[5] expand Miller's model to show that there are both domain dependant skills and domain independent skills. For example, domain independent skills include communication skills, which are not specific to a particular clinical task, and so may be assessed in a range of situations.

Success at each level of assessment prepares the learner for the next level on their journey to independent clinical practice. Rethans et al[6] argued that performance of a clinician in real life situations is affected by the individual, and by workplace systems, facilities, and resources. 'Does' is a better assessment of a person's performance than 'shows how', and so it is important to assess learners in real-practice, not only in the artificial environment of a university.

One way of evaluating an assessment is to use the utility equation (Figure 2).[7] This is a conceptual model, not a mathematical equation. Reliability considers whether the same result would be achieved if the assessment were repeated. Validity relates to whether we are assessing what we claim to be assessing. Educational impact can be viewed in terms of what type of learning activity the assessment encourages, and whether developmental feedback is provided to encourage further learning. Acceptability concerns whether stakeholders, such as institutions, healthcare colleagues, learners, and patients, find the assessment acceptable. Finally, the costs, not just in terms of money, but also time, are considered.

If one of these characteristics equals zero, the assessment has no utility. The model also indicates what compromises are made for each assessment, and what elements may need to be improved. For example, an assessment may have good reliability, validity, and educational impact, but it may have poor acceptability, or high costs.

WORKPLACE BASED ASSESSMENTS

Assessment within the workplace and at postgraduate level is less developed than assessment at undergraduate level. The curriculum and learning outcomes are often less well defined, and the context is less predictable, more varied, and more complex. Workplace Based Assessments (WBA) may assess performance of a group of integrated skills, rather than individual skills. They are intended to assess at the upper two levels of Miller's pyramid, 'shows how', and 'does', and often involve clinical performance assessed through observation by more experienced team members.

A WBA may be based on a single encounter or on several encounters. The WBA document designed for the Basic Medical Training (BMT) Logbook, 2016, of the College of Physicians and Surgeons of South Sudan, can be used for both. It provides formative assessment, and evidence towards the assessment of programme completion.

There are several grounds on which workplace performance can be assessed: occurrence, quality, and fitness and suitability.[8] A checklist may be used to note whether a particular behaviour or procedural step has occurred and been observed by the assessor; no judgement is made on quality, just on occurrence. Quality of performance is commonly assessed using a global rating scale. This is what is used in the BMT WBA document, where trainees are rated on a scale from 5 (Well above my expectation of a doctor at current level of training) to 1 (Well below my

Utility = Reliability x Validity x Educational Impact x Acceptability x Cost

Figure 2. The Utility Equation[7]

expectation of a doctor at current level of training). Global rating scales can be used whatever the clinical encounter involves. Fitness and suitability assess whether the trainee's performance was satisfactory or unsatisfactory. This can be expanded, as with the BMT WBA, to consider the trainee's level of independent practice.

There are a variety of different formats of WBA that can be found by searching the internet. In the UK, these include the mini-Clinical Evaluation Exercise (mini-CEX), Direct Observation of Procedural Skills (DOPS), and multisource or 360° feedback (MSF). Each considers a different aspect of performance. Trainees are assessed several times over a defined training period, and assessments are collected into a portfolio. Each year the portfolio is used as the basis for an assessment of suitability to progress.

Using a mini-CEX, the trainee is observed in a single patient encounter by a more senior colleague. The trainee's performance is given a score, and feedback is provided. Various elements of competency can be scored, including history taking, physical examination skills, and clinical judgement. DOPS is used in a similar way to assess practical procedures. MSF uses performance over time as the basis of an assessment of general professional skills. It involves the collection of feedback from colleagues including doctors, nurses, and allied healthcare professionals. Eight or more questionnaires are completed anonymously, and the findings collated before being offered to the learner.

ENTRUSTABLE PROFESSIONAL ACTIVITIES

Entrustable Professional Activities (EPA) are tasks that a person with appropriate training and assessment has been entrusted to carry out.[9, 10] An EPA document describes what work is to be carried out and to what standard, for example, to develop and implement a patient management plan. EPAs and competencies can be mapped against each other, to show which competencies are involved in an EPA. EPAs can be used in both undergraduate and postgraduate training. The decision to trust a candidate with undertaking an EPA unsupervised marks mastery of that EPA.[5]

OBJECTIVE STRUCTURED CLINICAL EXAMS

Objective Structured Clinical Examinations (OSCEs)[11] are used extensively within health care education to assess clinical skills. They are designed to assess performance against a standard, in a safe, simulated clinical environment. They are made up of a series of stations, each providing the candidate with appropriate clinical information and equipment to carry out a simulated task. The patient's role is performed by mannequins or actors, or real patients who have volunteered. When used as a summative assessment they assess competence to progress to the next stage of training.

When designing OSCEs, as a first step it is important to decide what will be assessed. 'Blueprinting' is a way of determining the content of an assessment, by checking that the assessment is aligned with the intended learning outcomes, and with the learning and teaching approach. Homer and Russell[12] argue that blueprinting should not just be carried out before OSCE stations have been developed, but also repeated once the stations are written, in order to ensure that constructive alignment has been achieved. If you wish to find out more about blueprinting then Khan et al[13] may be a good place to start.

OSCE stations generally take 5-15 minutes.[13] Ideally all stations should be piloted, and examiners should have assessment training prior to the OSCE. As well as appropriate resources for the clinical simulation, each station requires a set of instructions for candidates, instructions and scoring information for examiners, and instructions and scripts for any patients or role players. Suggestions for how to organise an OSCE can be found in Khan et al.[13]

How many stations are required to ensure reliability? This requires some psychometrics, which are outside of the scope of this article. However, the number of stations will also be affected by the time it takes to complete them all, and how many students can undertake the exam in one day. Having a number of trained examiners, with different examiners in each station, helps reliability.[14] Further information on appropriate psychometrics for OSCEs can be found in Pell et al.[15]

Some institutions undertake a screening OSCE for all students. The results are calculated, and those students on whom you need more information to allow them to progress take a further set of stations. Some programmes also decide that there are a minimum number of stations that a student must pass in addition to the cut score. This prevents students who do well in a few stations but perform poorly in most, from passing the exam. Again, this is outside the scope of this article, but if you are interested read Homer and Russell.[12]

CONCLUSION

In professional training and education, the sum is greater than the individual parts. No one assessment can assess everything a candidate needs to know or demonstrate competency in. Therefore, it is important to look across programmes of learning in order to ensure that the different assessments undertaken, collectively demonstrate that the candidate is competent and safe.

Detailed practical information on how to develop and implement these different types of clinical skill assessments is outside the scope of this article. However, many texts already exist that will help you take the next steps and

we have cited some here. An internet search, prompted by this article, will uncover more. Whatever type of assessment you choose to use, it is important not to forget the general principles and purpose of assessment: what are you assessing, and why?

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Brachial plexus block for the resection of a chondrosarcoma during COVID-19: A case report

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Submitted: March 2023
Accepted: March 2023
Published: May 2023

ABSTRACT

A case report of a 35-year-old female with a large low-grade chondrosarcoma of the left humerus. Resection was performed under regional anaesthesia (interscalene brachial plexus block): this is a useful technique where there are limited resources and during the COVID-19 pandemic.

Keywords: Brachial plexus block, chondrosarcoma, COVID-19, resource limited setting

INTRODUCTION

The severe acute respiratory syndrome, COVID -19, first appeared in December 2019 in Wuhan, China. The infection spread rapidly around the globe.[1] It manifests as a respiratory illness with a variety of presentations and outcomes.[2,3]

Transmission of this virus is from person to person through direct contact and respiratory droplets.[4] The spread was fast so it was advised that once the community spread is significant all cases may be presumed to be COVID-19 positive (patients may test negative during the incubation period which is 2-14 days).[5]

In Sudan the first case (and death) of COVID-19 was diagnosed on 13th March 2020 in Khartoum. A total lockdown of the Khartoum state was announced on 13th April.

ANAESTHESIA AND CANCER SURGERY

Anaesthetic techniques are related to mortality and recurrence of certain types of cancers by an effect on the immune system.[6] Anaesthetic agents may have both direct and hormone mediated effects on many facets of immunocompetence.

Anaesthesia induced activation of the hypothalamic-pituitary- adrenal (HPA) axis and sympathetic nervous system (SNS) may facilitate metastasis through several tumour – derived soluble factors.[7]

Volatile anaesthetics and opioids suppress cell mediated immunity (CMI) and promote cancer cell proliferation and angiogenesis whereas propofol inhibits tumour angiogenesis and does not suppress the CMI.[8,9] Regional anaesthesia preserves the CMI and decreases surgically induced neuroendocrine responses by attenuating afferent neural transmission activation of the HPA axis and SNS response. Thus, reduction in opioid and volatile anaesthetic use may reduce cancer recurrence.[10]

Regional anaesthesia should be preferred whenever possible as it lowers the risk of postoperative complications. This becomes more important in the context of respiratory infections.[11,12] General anaesthesia (GA) with airway intervention leads to aerosol generation, which exposes the health care team to a risk of transmission of COVID-19 both during intubation and extubation.[13]

Citation: Mohamed and Elbahri, Brachial plexus block for the resection of a chondrosarcoma during COVID-19: A case report, South Sudan Medical Journal, 2023;16(2):68-71 DOI: https://dx.doi.org/10.4314/ssmj.v16i2.7

CASE PRESENTATION

A 35-year-old female (ASA (American Society of Anaesthesiology) class 1) presented complaining of a left shoulder painful swelling and restricted movement for the last four months. A low-grade chondrosarcoma staging was based on X–ray of the left shoulder, CT chest and MRI of the entire humerus (Figure 1). Histological examination was done on a core needle biopsy. No other investigation carried out apart from the general pre-operative assessment laboratory investigations.

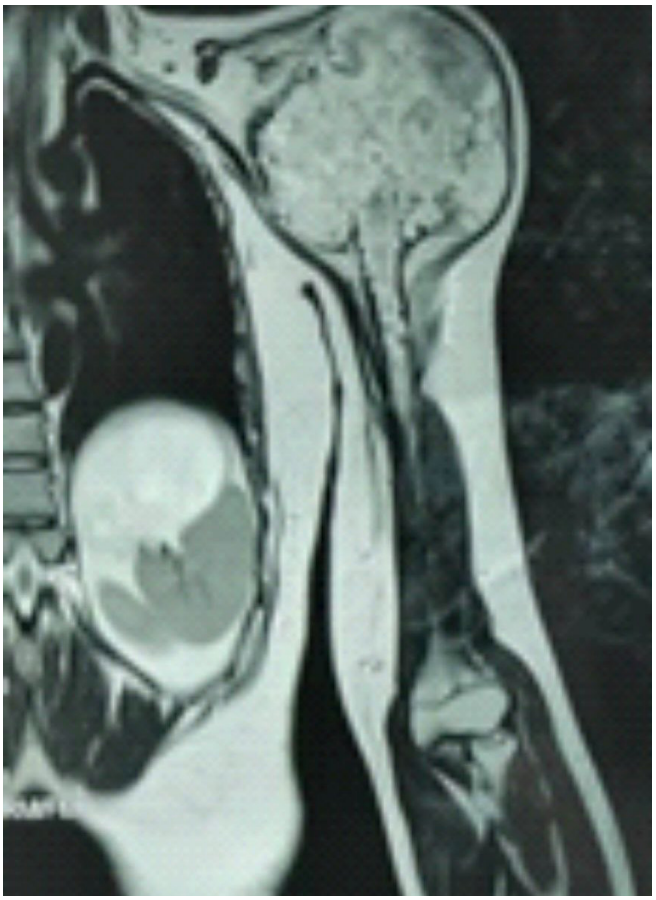


Figure 1. MRI shows heterogeneity large volume low grade chondrosarcoma tumour on proximal left humerus.

Surgery was considered to be urgently needed even during the COVID-19 pandemic. A wide resection and reconstruction with bone cement spacer build on Rush pin (an intramedullary stainless steel device) was planned. A prolonged operation was expected due to the large volume tumour as well as the preparation of the bone cement spacer over the Rush pin and stabilization to the glenoid and the remnant of the capsule by using prolene mesh. (Figures 2a and b).

In spite of these factors a regional anaesthetic brachial plexus block was considered appropriate.

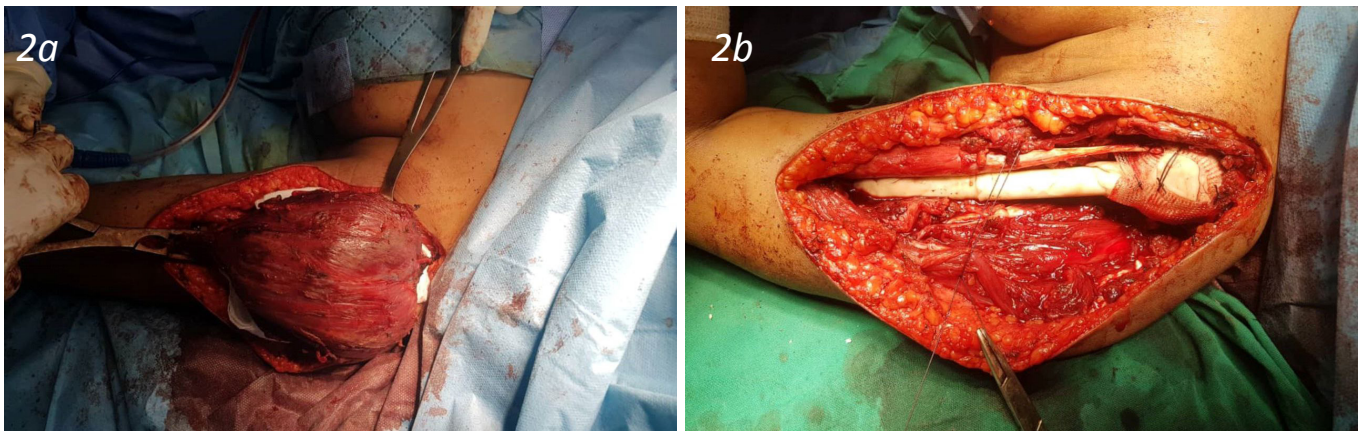
Written informed consent was obtained from the patient. Standard ASA monitors were attached: non-invasive blood pressure, pulse oximeter and ECG, and two 18G intravenous canulae were inserted. Baseline vital signs were: BP:130/70; PR: 85; RR:15; SPO2: 98%.

The patient received 50 mcg of fentanyl and 1mg of midazolam as anxiolytic before performing the block. Oxygen saturation was monitored closely and ranged between 95% to 98% without oxygen supplementationon.

ANAESTHESIA PROCEDURE

The anaesthetic procedure was explained to the patient. The left side of the neck, the site for the anaesthetic injections, was cleaned with 0.5% chlorhexidine in 70% alcohol. A mixture of 15 ml of plain marcaine 0.5% plus 10 ml of lignocaine with adrenaline 1% plus 2 ml of dexamethasone of 8 mg was used. With ultrasound guidance the interscalene brachial plexus was identified. This step was carried out with 12ml of the local anaesthetic mixture which was injected around C5 and C6 roots. Then a subclavian perivascular block was performed with 15 ml of the local anaesthetic.

Regional anaesthesia was performed using an old version of an ultrasound device (Alpinion-Ecube 5). (Figure 3a and b).



Figures 2a and b. Resection and reconstruction by cement spacer

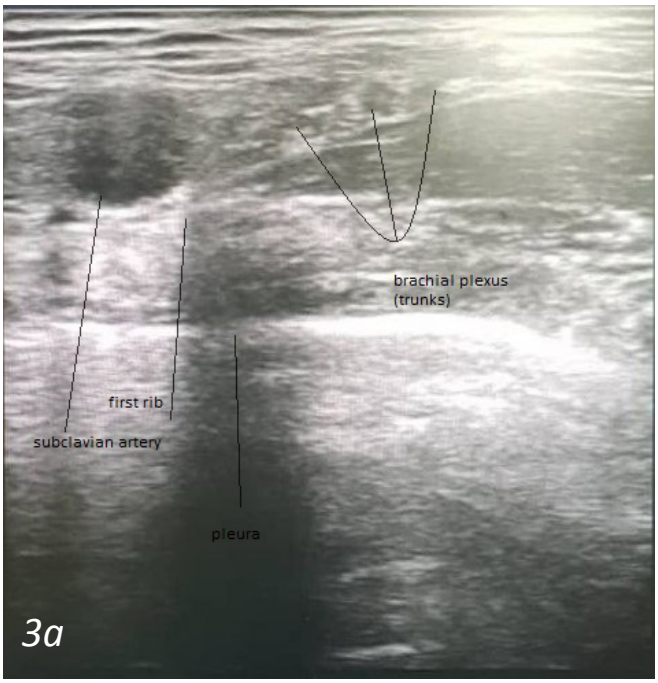


Figure 3a. Supraclavicular brachial plexus block

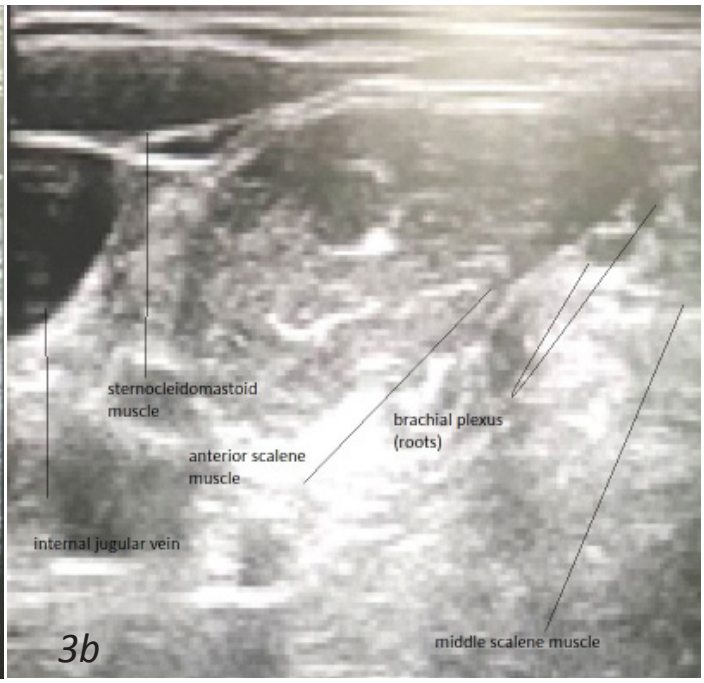


Figure 3b. Interscalene brachial plexus block

After fifteen minutes the site for the incision, which was expected to extend to the tip of the shoulder, was checked and found to have sensory and motor block. Paracetamol 1gm iv and sodium diclofenac 75mg im were given and fifteen minutes later the surgery started and continued for five hours, during which the patient was completely pain free (using a visual analogue scale). Vital signs remained stable throughout.

The surgery was done through the deltopectoral approach. The neurovascular bundle was identified, and isolated. The deltoid muscle was detached from the proximal humerus as well as the whole rotator cuff muscles. Resection of 17 cm of humerus was done with a 3 cm free margin from the distal end of the intramedullary extension of the lesion according to the preoperative MRI.

The block lasted for eight hours post-operatively. The patient was monitored for 24 hours for pain and given paracetamol 1 gm 6 hourly (i.v) and sodium diclofenac 75 mg (i.m) 8 hourly as the only analgesics.

CONCLUSION

The brachial plexus block as regional anaesthesia was found to be a safe method. Also, it was safe for operating room staff especially during the risk of respiratory virus spread as in this COVID-19 pandemic. It should be considered as alternative for ill patients instead of general anaesthesia. Regional anaesthesia is an accepted alternative for cancer surgery with decreased mortality and recurrence rate. In our case only brachial plexus block was needed, in spite of a large tumour size, prolonged surgery and an extensive incision. Conventional ultrasound without nerve stimulation can be used successfully to guide the block in limited resource settings. Postoperatively the patient needed only simple analgesics.

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Congenital mesenteric defects in an adult: A case report

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Submitted: February 2023
Accepted: April 2023
Published: May 2023

ABSTRACT

A congenital mesenteric defect in an adult is very rare, but can cause an internal hernia with small bowel obstruction. Awareness of congenital mesenteric defects is important to the general surgeon when faced with an acute abdominal condition. We report a case of a congenital mesenteric defect in a 40-year-old man who presented to the emergency department with acute abdominal pain. An X-ray revealed multiple air fluid levels with dilatation of small and large bowels suggestive of bowel obstruction or bowel ischaemia, or bowel perforations. He underwent an emergency laparotomy through a midline incision. A large mesenteric defect was discovered with viable small and large bowel. A primary repair of the defect was carried out. The patient had an uneventful recovery. Early diagnosis and treatment are essential to avoid bowel ischaemia and decrease the mortality and morbidity.

Keywords: congenital mesenteric defect, hernia, surgery, Ethiopia

INTRODUCTION

Trans-mesenteric internal hernias are aptly named because they involve herniation through a gap in the mesentery. Although surgeons are aware of the acquired type of trans-mesenteric hernia after bowel anastomosis, the congenital form is quite rare. It is most likely due to failure of mesenteric development secondary to an ischaemic insult in utero. Intestinal atresia is also found in 50% of infants presenting with a trans-mesenteric defect. The pericaecal and sigmoid mesenteries and the duodenojejunal junction are the commonest locations for such defects. Approximately 30% of cases remain asymptomatic throughout life.[1]

CASE REPORT

A 40-year-old Ethiopian man presented to the emergency department with a history of about 16 hours of periumbilical cramping non-radiating pain associated with nausea, and four episodes of non-bloody and non-bilious vomiting. He had absolute constipation. There was no report of fevers or chills. He had no previous abdominal surgery and no chronic conditions.

On examination: temperature 37.6^{C}, pulse 130/minute, blood pressure 100/66 mm Hg, respiratory rate 22/minute. There was no jaundice. The abdomen was distended and mildly tender on palpation with visible bowel peristalsis and hyperactive bowel sounds. A white blood cell count was elevated at 17,000/l and an abdominal X-ray (Figure 1) showed dilated small and large bowel with multiple air fluid levels. He was admitted for surgery. A nasogastric tube was placed for decompression. Intravenous normal saline 0.9% was started and intravenous ceftriaxone and metronidazole antibiotics were given.

Informed consent was obtained. The abdomen was opened through a midline incision. About 400 ml of peritoneal fluid were drained. The proximal (jejunum) small bowel had herniated through a mesenteric defect at the proximal level of the mesosigmoid colon mesentery about 15cm from the ligament of Treitz

Citation: Bugie et al., Congenital mesenteric defects in an adult: A case report, South Sudan Medical Journal, 2023;16(2):72-74 DOI: https://dx.doi.org/10.4314/ssmj.v16i2.8

Figures 2a and 2b). All the small bowel was viable with pulsations of the mesenteric vessels. There was no evidence of malrotation. The mesenteric defect was repaired using vicryl suture number 0 simple continuous (Figure 3).

The small bowel loop was repositioned, and the abdomen was closed in layers. The patient tolerated the procedure well. Bowel function resumed on the third postoperative day, and diet (tea and porridge) was initiated and tolerated, He was discharged on the tenth postoperative day. A follow-up check at one month showed that he was progressing well.

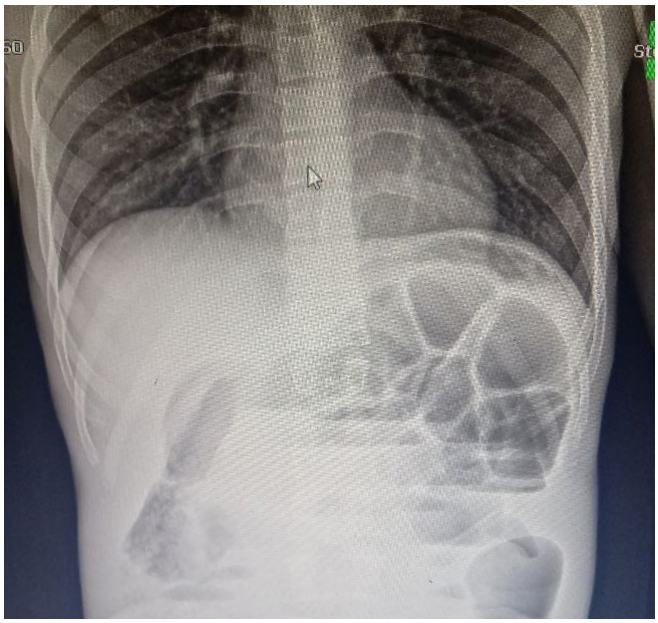

Figure 1. Abdominal X-ray showing dilated small and large bowel with significant multiple air-fluid levels (Credit: Dr Derilo Legesse)

DISCUSSION

A mesenteric defect is a known cause of internal herniation with potential for intestinal strangulation. A congenital mesenteric defect most often occurs in the small bowel mesentery and less commonly in the colonic mesentery. Most cases have been reported in infants and children, often associated with another intra-abdominal anomaly. Murphy found, in a series of eleven infants presenting with herniation of the small intestine through a mesenteric defect, ten had an associated anomaly the commonest being intestinal atresia.[2] The preoperative diagnosis of a mesenteric defect with herniation is difficult because of the wide range of abdominal symptoms. There are no specific radiographic findings apart from those of bowel obstruction. It has been reported that CT-scanning may suggest the presence of an internal hernia.[3]

Due to their infrequency, congenital internal hernias are rarely suspected preoperatively and frequently diagnosed intraoperatively. The term congenital is not synonymous with childhood in this instance because these hernias are often diagnosed later in life. Mortality associated with congenital internal hernias is associated with delayed diagnosis and the septic complications of bowel ischaemia. Treatment involves reduction of the herniated bowel, resection of necrotic bowel and closure of the mesenteric defect. Closure can be performed with absorbable or non-absorbable sutures running or interrupted. The risk of mesenteric herniation is increased after laparoscopic procedures with bowel anastomoses, specifically in gastric bypass procedures, because the closure of the mesenteric defect can be difficult. There should be a high index of suspicion in such cases.[1,4] Most cases, although suspected clinically, are found during surgery or upon autopsy.[5]

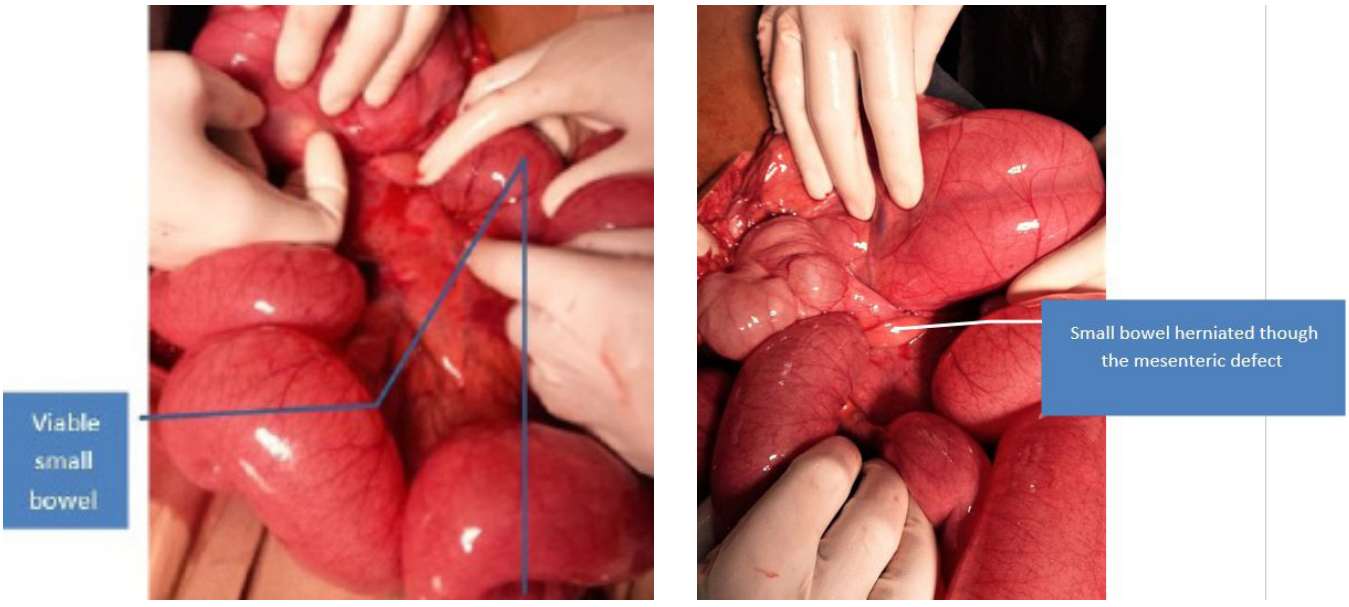

Figure 2a and b. Intraoperative finding showing viable small intestine herniated through a mesenteric defect (Credit: Dr Derilo Legesse)

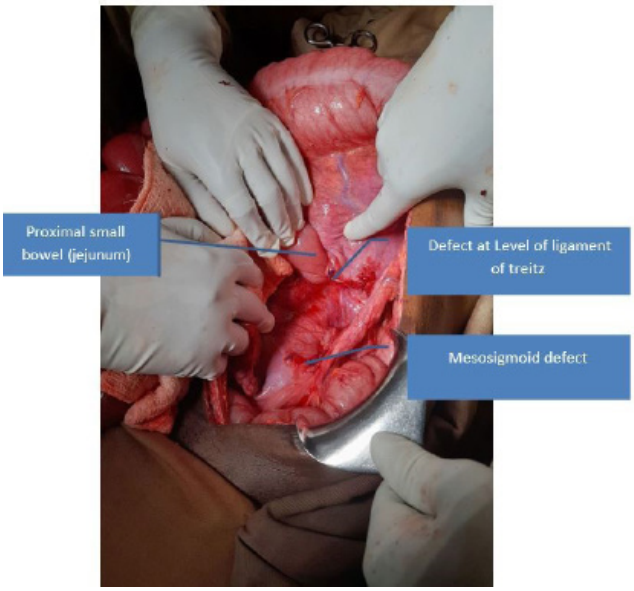

Figure 3. Large mesenteric defect closed from mesosigmoid to the level of ligament of Treitz (Credit: Dr Derilo Legesse)

The true incidence of mesenteric defects is unknown as many are asymptomatic. Mesenteric herniation as a cause of death is occasionally discovered at autopsy.[6]

CONCLUSION

Mesenteric defect is rare, but the surgeons should be aware of the possibility and management to avoid the bowel necrosis and high mortality and morbidity

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Spontaneous staphylococcal peritonitis: A case report

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Submitted: January 2023
Accepted: March 2023
Published: May 2023

INTRODUCTION

Ascites is a common problem in South Sudan but published data regarding the incidence are sparse. Much of that is related to nutritional deficiencies, the high incidence of Hepatitis B and C, and congestive heart failure. Although most ascites is transudative in nature, exudative ascites does occur and requires different management strategies.

CASE REPORT

A 41-year-old female presented with a two-week history of increasing abdominal girth. She had abdominal pain, but no vomiting or diarrhoea. She was negative for Hepatitis B and C. On examination, she had a clear chest and normal heart sounds, no murmurs or signs of heart failure. She had no significant adenopathy, was not jaundiced, and had no distension of superficial abdominal veins. Examination revealed a markedly distended abdomen that was moderately tender without localization. She had moderate tympany to percussion of the abdomen. An ultrasound showed + 3 ascites. She denied any history of instrumentation of her abdomen. A paracentesis was performed for both diagnostic and therapeutic reasons, removing 1.8 litres of fluid.

The paracentesis showed slightly cloudy fluid. Gram stain showed an excess of WBC's and Gram (+) cocci in clusters. There were no Gram (-) organisms. The laboratory, on the basis of the microscopical appearances, identified the organisms as a Staphylococcus. Facilities for culture and sensitivities were not available. She received IV cloxacillin, gentamicin, and oral metronidazole. Her symptoms improved, but after five days, she had re-accumulation of cloudy fluid, though ultrasound assessment of ascites was judged to be only +2. *[There is no universally agreed scoring system for recording the degree of ascites as found with ultrasound. However, we have used the following: +1 is fluid in the pouch of Douglas and gutters, +2 is in the lower abdomen and pelvis, +3 is around the liver and spleen, and +4 the liver is floating].*

Repeat Gram stain again showed moderate WBC's and Gram (+) cocci in clusters. In the presence of bacterial infection the fluid was judged most likely to be an exudate, so we drained 4 litres, attempting to drain all.

The patient was discharged on cloxacillin. She returned one week later with a slight re-accumulation of ascites. The patient was also diagnosed with malaria and treated with Coartem (artemether and lumefantrine). A week later there was no abdominal pain or distension and, no ascites was noted by ultrasound.

DISCUSSION

Ascites is a common problem in South Sudan, primarily from patients with liver cirrhosis, and portal hypertension (often secondary to Hepatitis B or C) or congestive heart failure. Spontaneous bacterial peritonitis (SBP) most typically occurs in the setting of previous ascites.[1] Bacterial peritonitis is typically from ruptured viscus, usually small bowel or colon. In that setting, the usual organisms are Gram (-) rods, such as *Escherichia coli*, and Klebsiella. Staphylococcal peritonitis is commonly found in the setting of peritoneal dialysis, and may be encountered following instrumentation of the abdomen, such as paracentesis,

Citation: Osman, Obonyoh and McIntosh, Spontaneous staphylococcalperitonitis: A case report, South Sudan Medical Journal, 2023;16(2):75-76 DOI: https://dx.doi.org/10.4314/ssmj.v16i2.9

but this patient denied having any previous abdominal punctures. The ascites was present and cloudy at the time of the initial paracentesis; the Gram stain was positive at that time, thus making it unlikely that the infection could have been introduced at the time of the paracentesis.

As with pleural fluid, ascites can be either a transudate (from increased pressure, as caused by congestive heart failure or portal hypertension) or an exudate from an inflamed membrane. The definitive distinction between a transudate and exudate is by protein content (exudate > 3.5 g/dl, transudate < 2.5 g/dl) but our hospital does not have that capacity at present. Transudates tend to respond well to diuretics, whereas an exudative peritonitis responds poorly. Bacterial infections, including TB, generally cause an exudative ascites.

If the likely aetiology of the ascites is unclear, paracentesis is indicated.[2] If the ascites is a transudate, 4-5 litres is usually the accepted upper limit of safe drainage to prevent large shifts of intravascular volume.[3] If the ascites is exudative, such as in our case or in TB peritonitis, all the fluid should be removed if possible.

This is the second case of spontaneous Staphylococcal peritonitis to be reported.[4] There is, of course, the possibility that the patient failed to report some instrumentation of the peritoneum, either at home or with the tribal doctors, but there were no wounds on the abdomen to suggest such manipulations. The response to parenteral antibiotics and paracentesis was favourable.

CONCLUSION

In a patient with rapid accumulation of ascites, particularly in the absence of congestive heart failure or Hepatitis B or C infection, paracentesis should be considered. The instruments required are typically available in most hospitals in South Sudan. If the fluid is clear or straw coloured and free flowing, it is most likely a transudate, so no more than 5 L should be removed at a time.[3] If the fluid is cloudy, slow flowing, bloody, milky in appearance, further diagnostic studies are indicated and an attempt to drain all the ascites is appropriate.

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Gordon Memorial College Trust Fund (GMCTF) Grants for Postgraduate Studies

Dr. Eluzai Abe Hakim, FRCP Edin, FRCP

Member Executive Committee of GMCTF, Associate Editor of South Sudan Medical Journal &International Adviser to the Royal College of Physicians London on South Sudan

At the last annual meeting of the Executive Committee of the GMCTF a number of grant awards were made to eligible South Sudanese and Sudanese applicants. There were **120** applications for grants from both South Sudan and Sudan; **34** were short listed for consideration and **19** grants were awarded.

The areas of study supported this year were: Paediatrics **4**, Obstetrics & Gynaecology **5**, General surgery **5**, Radiology **0**, Anaesthesia **1**, Neurosurgery **1**, Orthopaedics & Trauma **1**, Ophthalmology **1**, and Health Economics **1**.

Although almost all applicants who received grants this year were medical doctors the Committee welcomes applicants in other fields of study such as education, agriculture, veterinary medicine, law, basic sciences and the humanities.

This is to remind applicants for GMCTF grants that applications open on the first of December each year and close at the end of February the following year. All applications must be made online through the Trust website, www.gmctf.org, and must be accompanied with two letters of reference one of which must be from a referee in the area of study.

Those applying for the first time must have evidence of admission to a postgraduate course in a recognised university outside the Sudan and South Sudan. For those already holding a grant who wish to renew their grants for a year or more must demonstrate progress in their studies. This category of applicants should append a letter of recommendation from their course supervisor, Head of Department or the Dean of the Faculty where the studies are undertaken. It is important that applicants state the duration of the course applied for explicitly and not give a duration range such as 3 to 4 years. This may lead to rejection of the application.

The Gordon Memorial College Trust Fund is a UK registered charity (no. 314141). It is administered by a group of Trustees and an Executive Committee. **The purpose of the Fund is to promote educational development in South Sudan and Sudan.** Grants are available for educational projects and activities in South Sudan and Sudan and for South Sudanese and Sudanese nationals studying for a postgraduate courses in the UK, or in countries neighbouring Sudan and South Sudan, who intend to return to South Sudan or Sudan at the end of their studies. The Trust may also give financial assistance to South Sudanese and Sudanese nationals towards the costs of shorter training programmes, projects and courses in the UK. *Please note that at present due to current difficulties in transferring funds to South Sudan and Sudan it is not possible for the Trust to support individual students studying in South Sudan or Sudan.*

The scholarships are awarded on merit judged on objective criteria. Funds are limited and the se-lection criteria are very rigorous.

How to increase your chance of securing a scholarship

1. Apply online between 1st December of one year and end of February of the following year. The GMCTF committee meets in late March/ early April each year to consider short listed candidates for award of scholarships.
2. Ensure that letters from two referees are submitted to the Secretary before the closing date as this may delay consideration of applications

or lead to rejection of the applications concerned.

3. Append a letter of admission to a recognised institution where studies are to be undertaken and ensure that the fees charged by the Institution/ University are clearly set out by the institution on their headed paper and signed by a recognised officer of that institution. Do not guess the amount of fees or living expenses as excessive estimates of finances deemed to be unreasonable may lead to rejection of the application.

4. For a course more than one year long, applicants must apply every year of study for a fresh scholarship, supporting their applications with letters from their course supervisor and Head of Department confirming the applicant's satisfactory progress.

5. Declare any other sources of funding which may be contributing to the course fees or living expenses; providing clear financial information will improve the chances of success.

6. **GMCTF particularly welcomes applications from women.**

GMCTF has limited funds, and individual requests for amounts exceeding five thousand sterling pounds (£5000) or equivalent are unlikely to be successful. If an applicant has other sources of funding to contribute to their training, and is eligible for the award of a GMCTF grant, this is likely to improve their chances of an award of a grant. Applicants are encouraged to make clear what other sources of funds they will have in addition to GMCTF support.

A WHO road map for neglected tropical diseases 2021–2030

The road map sets global targets and milestones to prevent, control, eliminate or eradicate 20 diseases and disease groups as well as cross-cutting targets aligned with the Sustainable Development Goals. Three foundational pillars will support global efforts to achieve the targets: accelerate programmatic action (pillar 1), intensify cross-cutting approaches (pillar 2) and change operating models and culture to facilitate country ownership (pillar 3).

The disease summaries annexed to the road map detail the current epidemiological status and burden of disease, core strategic interventions and progress towards the 2020 targets of the previous road map. The targets, sub-targets and milestones for 2030, and the critical actions required to achieve them, were used to generate the evidence in the road map document endorsed by the World Health Assembly.

https://www.who.int/publications/i/item/9789240010352

Assessing clinical skills

Dear Editor,

This issue of the South Sudan Medical Journal includes "An introduction to assessing clinical skills" by Sophie Hill and Rich Bregazzi. It is a concise summary on current orthodoxy and core references. Sixty years ago, the assessment process of medical students often failed to distinguish between good and poor doctors. Nowadays things have improved considerably, but problems remain.

Miller's pyramid of clinical skills assessment shows that for clinicians to progress from a novice to an expert they must first know there is something to do, then know how to do it, then show how to do it, and then do it. This journey requires knowledge and skill: both can be tested. It also requires the right attitude. What is the right attitude, and how is it tested? The right attitude for a doctor is being available, coming to a patient when called and not leaving if needed; being honest enough to know when you need to call for help; recognising and learning from your mistakes; and being kind. Some clinicians are born with the right attitude, but others may acquire it along with wisdom as they age. Sadly, many can lose it. Physician "burnout" has now become endemic; it is often blamed on overwork and life/work imbalance, so that many clinicians choose to be less available to patients and provide little or no continuity of care. However, maybe physicians are unhappy because they must be deemed "competent" by ongoing arbitrary and prescriptive assessments, and by a sinister and poisonous climate in which everyone is filling out forms and checking on everybody else, without any evidence of benefit for anyone? Should this approach be promoted in low-resource settings in Africa?

So how should the clinical skills of a doctor in South Sudan be determined, and should they regularly undergo competency assessment?

The traditional advice to a young doctor on how to establish a practice was to be available, affable, and affordable, which would attract many patients, which in turn would inevitably result in the acquisition of ability. The only clinical skills that matter are recognising that a patient is sick and then accurately eliciting their signs and symptoms. There are only a finite number of signs and symptoms. Yet from these most diagnoses can be recognised, in the same way that an endless number of tunes can be recognised from just twelve musical notes. In a resource poor setting this fundamental process of taking an accurate history and performing a thorough physical examination must remain the bedrock of medical care. Once this skill is acquired a physician can keep it only by using it. Increasingly in the resource rich world it is no longer used and has been replaced by diagnostic technologies, whose proficient adoption in now considered to be "clinical skill".

So how should the clinical skills of a doctor in South Sudan be determined, and should they regularly undergo competency assessment? If so, what types of assessments are relevant, who is going to do them, and what is going to happen to physicians who fail their assessments? What Africa most needs is adequately trained doctors to be available and affordable to as many patients as possible.

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Concerns about malaria in South Sudan

Dear Editor,

I appreciated your editorial regarding malaria[1] and I have several comments.

As you noted, thousands of South Sudanese children die every year from malaria. If thousands of American, British, or European children were dying every year from a single disease, there would be a huge public outcry for immediate solutions. The scientific community has the ability to bring about the extinction of the Anopheles mosquito by the introduction of a gene lethal to the female larvae.[2] Progress is held up by environmentalist concerns. I say, let us start pushing for the introduction of that gene in our country. Done properly, Anopheles mosquitoes could be extinct in our country within five years. No species of animal is dependent on mosquitoes for survival,[2] and no catastrophic environmental concerns accompanied the elimination of the Anopheles mosquito from America. So, now is the time to take steps to eliminate this mosquito in South Sudan. We do not have the luxury of time for foreign experts to talk out their theoretical concerns while our children and mothers die.

In your editorial, you place much of the blame on families; the treated nets that we pass out are often used for storing ground nuts and sorghum rather than for protecting the family during sleep. Let us also acknowledge our own culpability in this increasing problem of malaria in South Sudan. We, as clinicians and the Ministry of Health, have added to the emergence of artemisinin-resistance in malaria. When I was in Rumbek, the usual practice from the scores of unauthorized pharmacies in the market was to use artemether injections[1-3] without any form of Artemisinin Combination Therapy (ACT) follow-up. This is contrary to all recommendations,[3] where artemisinin-based monotherapy must be followed by three days of ACT to complete the treatment. By giving artimisin as a single drug, we are contributing to the emergence of resistance. Moreover, when a patient has failed to respond to one form of ACT, the most common response is to use another form of ACT or go to parenteral artemisinin rather than going to quinine-based treatment.

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We have also ignored obvious trends and foster unscientific practices.
In studies from 2005, artesunate was much more effective than quinine, but quinine had been in use (in various forms) for centuries and artesunate was a new drug.[4] Many areas in Asia and Africa are reporting artemisinin-resistant strains of malaria. By 2012, the differences were markedly reduced, and a recent report from South Africa in ICU[5] patients and others[6] showed no difference in mortality, but South Sudan's clinical guidelines continued to favour artesunate over quinine.

In addition, our national guidelines continue to recommend a loading dose of quinine (although it has never been shown to affect clinical outcomes).[7] Such an approach complicates dosing of quinine, setting up the potential for errors in treatment, especially in a busy, understaffed ward. It has been suggested that the bolus of the loading dose may have been responsible for some of the earlier increased mortality with quinine.[8]

During my years in the Nuba Mountains (2016-2020), I adopted the "Gidel method" because of its simplicity and efficacy. We gave 30 mg/kg of quinine in dextrose over 16 hours. Such an approach provides the quinine needed as a modified "loading dose" without requiring multiple calculations or changes in the drip. This reduces the nursing workload and the possibility of error. The mathematics are really simple: multiply the body weight of the patient in kilogrammes (kgs) by 0.1 to arrive at the

millilitres of quinine (300 mg/ml) needed. A 15 kg child gets 1.5 ml; a 45 g patient receives 4.5 ml. (maximum dose 6 ml). That volume of quinine is added to dextrose (5 or 10%) and dripped in over 16 hours. For children 20 kg and under, we use 500 ml; over 20 kg, we use a litre.

If the patient has not completed some form of ACT in the last month, we have followed that drip of quinine with ACT (usually Coartem), in keeping with guidelines[3] and our failure rate has been low, both in adults and children. Indeed, in our hospital we have had multiple failures with artesunate, but none with quinine.

This approach has two distinct advantages. It is the simple, making it easier for clinicians to calculate the dose and for nurses to check and make sure we have not made an error. Secondly, it is far less expensive than the use of artesunate and somewhat cheaper than using the loading dose method.

The provision of more funds from the WHO may be helpful, but the reality is that we need to push for something that will truly impact our people. Ridding our country of the Anopheles mosquito will do that. In the meantime, we need to shift our therapeutic approach to something more fitting to the new realities of 2023.

We need to shift our therapeutic approach to something more fitting to the new realities of 2023.

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World Health Organization

Globally, as of 12:37 am CEST, 26 April 2023, there have been 764,474,387 confirmed cases of COVID-19, including 6,915,286 deaths, reported to WHO.

WHO Coronavirus (COVID-29) Dashboard