A retrospective audit of paediatric surgical admission in a sub-urban tertiary hospital

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Summary

Background: **Data on utilization of paediatric surgical services and the burden of paediatric surgical diseases in the West African subregion is scarce.**

Methodology: **This retrospective study describes paediatric surgical admissions in a Nigerian teaching hospital between January 1998 and December 2002.**

Results: **Two hundred and eighty three children up to 15 years of age with surgical disorders were studied. Their mean age (± SD) was 5.8 ± 4 years for males and 6.9 ± 4 years for females. Length of stay (LOS) ranged from 1 to 127 days (mean 17 days). Turnover interval declined from 22.1 to 6.4 days while percentage bed occupancy and patients per bed per year averaged 70% and 17.4 respectively between January 2000 and December 2002. The highest mean LOS was due to malignant neoplasm (38 ± 12 days), trauma (22 ± 25) and surgical infection (21 ± 22 days) while the shortest mean LOS was due to foreign body (6 ± 4 days). The most common admitting diagnoses were trauma (36.7%), congenital anomalies (27.9%) and surgical infections (22.6%). Foreign body (2.1%), benign tumours (0.7%) and malignant neoplasms (0.7%) were uncommon. Overall mortality was 0.4%.**

Conclusions: **Childhood injuries, congenital anomalies and infections are important paediatric health problems.**

Keywords: ***Children, Admission, Injuries, Congenital malformation, Pattern, Surgical care, Infection.***

Résumé

Introductions: Les données sur l'utilisation du service de la chirurgie pediatrique et le problème des maladies à travers la chirugie pédiatrique dans la sous région de l'Afrique de l'Ouest est rare.

Méthodologie: Cette étude après coup met en relief les cas des chirurgies pédiatriques admis à l'hôpital d'un centre hospitalier universitaire du Nigeria entre janvier 1998 et décembre 2002.

Résultats: deux cents quatre vingt trois enfants âgés de 15 ans avec des troubles chirurgicals ont été étudiés. Leur âges moyens (± SD) était 5,8 ± 4ans pour le sexe masculin et 6,9 ±4 ans pour le sexe féminin. La durée de sejour (LOS) était de l'ordre 1 à 127 jours (moyen de 17 jours). L'interval du chiffre d'affaires était en baisse de 22,1 à 6, 4 jours trandis que le moyen du pourcentage d'occupation des lits et des patients par lits par un an était 70% et 17,4 respectivement entre janvier 2000 et décembre 2002. Moyen le plus élevé LOS était attribuable au néoplasme malin (38 ± 12 jours), traumatisme (22 ± 25) et l'infection chirurgicale (21 ± 22 jours) tandis que le moyen le plus court LOS était attribuable au corps étranger (6 ± 4 jours). Les diagnostics, au cours d'admission, les plus courants étaient traumatisme (36,7%), anomalies congénitales (27,9%) et des infections chirurgicales (22,6%). Corps étranger (2,1%) tumeurs bénigne (0,7%) et néoplasme malin (0,7%) étaient peu commun. Dans l'ensemble, la mortalité était 0,4%.

Conclusion: Blessures d'enfance, anomalies congénitales et des infections sont des problèmes de la santé pédiatrique très importants.

Introduction

Prevalence studies of paediatric surgical diseases in communities in West Africa are rather uncommon. Results of such studies would have provided essential data on the burden of surgical diseases among children that will assist in planning paediatric surgical services. Hospital based study of disease pattern is the best alternative but there is also paucity of published data from the West African subregion.

The study center is a tertiary hospital with a 6-bed ward for all paediatric surgical admissions irrespective of the admitting specialty. Admissions are mostly from the accident and emergency, children's emergency room as well as the consultant outpatient departments.

This study was intended to review the spectrum of paediatric surgical diseases requiring hospital admission and the degree of efficiency of utilization of the available bed space.

Patients and Methods

The admissions and discharges register of the paediatric surgery ward was utilized to identify all children admitted between January 1998 and December 2002. Case records of the identified patients were subsequently retrieved from the central medical records department. Case records that were not found or were incomplete were excluded from analysis.

Final diagnoses were obtained from the patients' records. These had been coded in accordance with the International Classification of Diseases, injuries and Causes of Deaths (ICD)[1] in the case files. Other information retrieved from the patients records included outcome of treatment, age, sex, length of stay (LOS) and operation performed.

Data analysis was performed using Epi Info version 2002 (CDC Atlanta, USA). Analysis of number of patients per bed per year, turn around interval and percentage bed occupancy was done using the formulae of Barber and Johnson[2] and was available for the years 2000 to 2002.

Results

Case records of 283 children were suitable for analysis. Of these, 180 were males (63.6%) and 103 (36.4%) were females, giving a male to female ration of 1.7:1. Their ages ranged

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from 6 days to 15 years, with a mean age of 6 ± 4 years. The mean age of the male children was 5.8 ± 4 years (range 6 days to 15 years) while that of the females was 6.9 ± 4 years (range 2 months to 12 years).

Table 1 Characteristics of 283 children admitted for surgical diseases

	Number	%	Length of stay (day) Mean±sd	Range
Age				
Range	6 days - 15yrs			
Mean	6 ± 4yrs			
Sex				
Male	180	63.6		
Female	103	36.4		
Total	283	100		
Length of stay				
Range	1 to 127 days			
Mean	17 ± 20.5 days			
Indication for admission				
Trauma	104	36.7	22 ± 25	1 - 127
Infection	64	22.6	21 ± 22	2 - 102
Malformations				
Congenital	79	27.9	9 ± 4	1 - 43
Acquired	10	3.5	16 ± 16	2 - 47
Neoplasms				
Benign	2	0.7	9 ± 4	6 - 11
Malignant	2	0.7	38 ± 12	29 - 46
Foreign body	6	2.1	6 ± 4	2 - 11
Miscellaneous	16	5.7	13 ± 9	2 - 11
Total	283	100		

Table 2 Types of injuries

Diagnosis	Number	%
Fracture	45	43.3
Burns	20	19.2
Laceration	15	14.4
Contusion	2	1.9
Abrasion	1	1.0
Head injury	12	11.5
Crush injury	3	2.9
Post traumatic pain	3	2.9
Ruptured spleen	1	1.0
Traumatic aneurysm	1	1.0
Stab injury	1	1.0
Total	104	100

Table 3 Types of surgical infections

Diagnosis	Number	%
Peritonitis	23	35.9
Osteomyelitis	12	18.8
Pyomyositis	6	9.4
Appendicitis	5	7.8
Skin ulcers	5	7.8
Epididymoorchitis	3	4.7
Mesenteric adenitis	3	4.7
Septic arthritis	1	1.6
Necrotising fascitis	1	1.6
Others	4	6.2
Total	64	100

Table 4 Types of congenital malformations

Diagnosis	Number	%
Inguinal hernia	26	32.9
Cryptorchidism	8	10.1
Hydrocoele	7	8.9
*CTEV	5	6.3
Umbilical hernia	4	5.1
Imperforate anus	4	5.1
Cleft lip	3	3.8
Intestinal obstruction	2	2.5
Genu valgum/varum	2	2.5
Camptodactyly	1	1.3
Hirschsprung's dis.	1	1.3
Hypospadias	1	1.3
Cong. macrostomia	1	1.3
Uncircumcised	1	1.3
Others	13	16.5
Total	79	100

**CTEV: Congenital talipes equinovarus*

The length of stay ranged from 1 to 127 days. The modal LOS was 3 days while the mean LOS was 17 days. As shown in table 1, trauma was responsible for the longest LOS (127 days), but the longest mean LOS was due to malignant tumours (38 days) while foreign body aspiration/ingestion resulted in the shortest mean LOS (6 days). The turnover interval (TI) declined sharply from 22.1 days in 2000 to 6.4 days in 2002. During the same period, percentage bed occupancy and number of patients per bed averaged 70% and 17.4 respectively, figure 1.

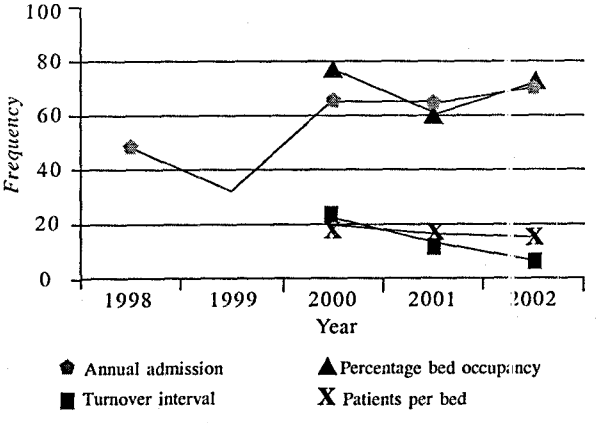

Fig. 1 ***Annual admission and bed utilisation***

The orthopaedic and trauma service admitted 155 of the patients, representing 54.8% of the total while 121 (42.8%) were admitted by the paediatric general surgery service and 7 (2.5%) by the ear, nose and throat (ENT) service.

The most common indications for admission were trauma 104 (36.7%), congenital malformation 79 (27.9%) and surgical infection 64 (22.6%). Others were acquired deformities 10 (3.5%), foreign body aspiration/ingestion 6 (2.1%), benign neoplasm 2 (0.7%), malignant neoplasm 2 (0.7%) and

miscellaneous surgical conditions 16 (5.7%). Analysis of these categories of final diagnoses showed that the most common indication for trauma related admissions were fractures, representing 43.3% (n = 45) of this group, table 2. Similarly, table 3 indicates that peritonitis accounted for 35.9% (n = 26) of surgical infections while inguinal hernias represented 32.9% (n = 26) of congenital malformations, table 4.

One hundred and forty nine children, 52.7% of all admissions, had various operative procedures while 134 (47.3%) were managed non-operatively. More than 22 different types of surgical procedures were carried out. The most frequently performed operations were herniotomy 33 (22.1%), laparotomy 25 (16.8%) and suturing of lacerations 11 (7.4%). The least commonly performed procedures were arthrodesis, split skin grafting and circumcision, 1 (0.7%) each.

The annual admissions tended to increase over the study period, figure 1. Two hundred and fifty eight children, 91.2%, were treated and discharged. Twenty eight children, 7.1%, were discharged against medical advice by their parents or guardians while 4 (1.4%) were referred to other centers. There was one death, 0.4%, during the study period. This was a 6-day old baby with Hirschsprung's disease that died 72 hours after admission.

Discussion

In industrialized countries, accidental injuries are the leading cause of childhood mortality[3,4] and are second to acute infections as the cause of morbidity[4]. It is increasingly evident that injuries are also important paediatric surgical conditions in developing countries as in Sub-Saharan Africa[5]. In this report, injuries were the most common paediatric surgical indications for hospital admission. This is consistent with observations from other centers in the West African subregion[6,7] and elsewhere in Africa[7], although prevalence rates vary. The 36.7% trauma admission rate in this report is greater than the 25% reported from Ethiopia[8] but less than 46% reported from the Gambia[7]. The most prevalent paediatric surgical conditions in this report, accidental injuries, congenital anomalies and surgical infections in that order of frequency, are similarly prevalent elsewhere in Sub-Saharan Africa[6,7,8]. Also, this is similar to our previous observation[9]

The dramatic decrease in turnover interval by 245% over a 3-year period observed in this study and an average bed occupancy of 70% during the same period suggest a modest efficiency of bed utilization in a subregion where paediatric surgical care has been described as taking place in an environment of limited resources and facilities[10]. In 2001, there were work stoppages in the study center totaling 46 days between May and July as a result of workers' strike action, and resulted in mass patient discharges from wards. Frequent occurrence of such events has the potential of discouraging hospital attendance.

Low mortality rate in this report, 0.4%, is similar to 0.8% in the report of Abatanga and Amaning[11] from Ghana.

The DAMA (discharge against medical advice) rate in our report is 7.1%. Other studies are required to confirm this rate and identify the reasons for its occurrence.

Our results have shown that the wide spectrum of paediatric surgical conditions in a West African hospital makes them a public health concern.

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