

An Epidemiologic Profile of Laparotomy Cases in Yangon Children's Hospital

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The operating theatre registers of the Yangon Children's Hospital for 1984 through 1986 were studied to determine epidemiologic parameters of interest. Annually, laparotomy cases comprised about 11% of all the major operations in the hospital. Of the laparotomy cases, congenital diseases constituted the highest proportion (42.4%), followed by acute abdominal conditions (37.1%) and cancer (3.0%). 65.1% surgical operations for imperforated anus were on neonates; 44.3% of operations for Hirschsprung's disease on infants under 6 months; 70.6% of operations for intussusception on post-neonates; 47.3% of operations for intestinal obstruction on 1-4 years old; and 51.5% for intestinal perforation, 50% for biliary obstruction, 46.5% for appendicitis and 43.5% for volvulus on 5-9 years old. There was preponderance of males to females for Hirschsprung's disease (3.4 : 1), imperforated anus (2.6 : 1), intestinal obstruction (2.5 : 1) and appendicitis (1.8 : 1). The mean (+ SD) duration of operation in minutes for biliary obstruction cases was the longest at 129(+ 50), followed by volvulus 114(+ 35), and intestinal obstruction 109(+ 37). The durations, however, varied according to the type of surgical procedures performed. Factors influencing "duration of operation" are discussed from the epidemiologic perspective.

INTRODUCTION

There have been few reports on surgical operations performed in the hospitals of Myanmar. The majority of them provide limited information, mainly on total number of cases operated by single disease or by month according to type of surgery (major or minor) or type of anaesthesia (1). In order to contribute knowledge to the domain of 'surgical epidemiology', we undertook a hospital-based study on laparotomy cases with the following aims: (a) to determine the extent and pattern by disease with respect to age and sex; (b) to determine the duration of surgical operations by disease, and by operational procedure.

MATERIALS AND METHODS

The operating theatre registers of the

Yangon Children's Hospital (YCH) were scrutinized. Each laparotomy case was examined for admission number, age, sex, diagnostic condition, time beginning and ending of operation and type of procedure. Data were collected for 3 years from 1984 to 1986. Diagnoses of disease were as stated in the registers. "Intestinal obstruction", however, excludes Hirschsprung's disease, imperforated anus, and other congenital conditions. Data summarized as totals, means, standard deviations, rates and percentage distributions are presented in Table 1 to 4. Student's t-test was used for testing significant difference between two means (2).

RESULTS

Total numbers, rates and patterns of surgical operations - Through 1984 to 1986, an annual average of 3406 major

Table 1. Percentage distribution of laparotomy cases by year in Yangon Children's Hospital.

Disease	1984		1985		1986		Total		
	No.	%	No.	%	No.	%	No.	%	
Acute abdominal conditions	141	36.0	121	30.6	147	46.1	409	37.1	
Hirschsprung's disease	36	9.2	65	16.4	32	10.1	133	12.0	} 42.4
Imperforated anus	39	10.0	54	13.7	36	11.3	129	11.7	
Other congenital abnormalities	97	24.9	73	18.5	37	11.6	207	18.7	
Cancer	13	3.3	9	2.3	11	3.5	33	3.0	
Other diseases	65	16.6	73	18.5	55	17.4	193	17.5	
Total	391	100.0	395	100.0	318	100.0	1104	100.0	

operations were carried out on inpatients in the Yangon Children's Hospital. Of these, 368 cases (11.1%) had laparotomy. Again, of the laparotomy cases, congenital diseases as a group constituted the highest (42.4%). Other common group diseases were acute abdominal conditions (37.1%), and cancer (3.0%) (Table 1). Among the 409 acute abdominal cases operated on in these 3 years, the highest number was for intestinal obstruction (138 cases), followed by appendicitis (114 cases), intussusception (85 cases), intestinal perforation (33 cases), volvulus (23 cases) and biliary obstruction (16 cases) (Table 2).

Age and Sex at operation - In terms of age, 65.1% of surgical operations for imperforated anus were performed in the neonatal period (less than 1 month of life); 44.3% of operations for Hirschsprung's disease in the first half of infant life; 70.6% of operations for intussusception in the post-neonatal period (1 month to 12 months); 41.3% of operations for intestinal obstruction and 39.4% of operations for cancer during 1 to 4 years; and 51.5% for intestinal perforation, 50.0% for biliary obstruction, 46.5% for appendicitis and 43.5% for volvulus on 5 to 9 years old

(Table 2). For the 10+ year age group, operations were mainly for acute appendicitis, biliary obstruction and intestinal perforation (Table 2).

Regarding sex distribution of common diseases during 1985 and 1986 (where cases were sufficient for the analysis), males had a higher frequency of operations than females particularly for Hirschsprung's disease (3.4:1), imperforated anus (2.6:1), intestinal obstruction (2.5:1), and appendicitis (1.8:1).

Time taken at operation - During 1984, 1985 and 1986, operation time durations for a total of 1067 cases of laparotomy were found to be properly recorded. The overall mean (\pm SD) was 90 (\pm 60) minutes. On the average, operation time for biliary obstruction took the longest, 129 (\pm 35), followed by cancer, 115 (\pm 56), volvulus, 114 (\pm 35) and intestinal obstruction, 109 (\pm 37) (Table 3).

Duration of operation varied greatly by type of surgical procedure in respect of some common diseases in 1985 and 1986. Except in intestinal obstruction, the operation time by procedure was significantly different in intussusception, volvulus, Hirschsprung's disease and imperforated anus (Table 4).

Table 2. Percentage distribution of laparotomy cases by age in Yangon Children's Hospital during 1984, 1985 & 1986

Disease	Age						Total
	< 1mn	1-5mn	6-11mn	1-4yr	5-9yr	10+yr	
Acute abdominal condition							
Intestinal obstruction	7.2	13.0	8.0	41.3	22.5	8.0	100.0 (138)*
Appendicitis	0.9			6.1	46.5	46.5	100.0 (114)
Intussusception		31.8	38.8	18.8	9.4	1.2	100.0 (85)
Intestinal perforation		3.0	3.0	18.2	51.5	24.2	100.0 (33)
Volvulus	8.7	8.7	8.7	26.1	43.5	4.3	100.0 (23)
Biliary obstruction				12.5	50.0	37.5	100.0 (16)
Hirschsprung's disease	21.8	22.5	9.8	36.1	8.3	1.5	100.0 (133)
Imperforated anus	65.1	7.7	3.1	18.6	4.6	0.8	100.0 (129)
Cancer	3.0	15.2	12.1	39.4	27.3	3.0	100.0 (33)
Other disease	17.7	10.3	4.5	22.5	30.0	15.0	100.0 (400)
Total	17.9	12.1	7.8	24.4	24.7	13.0	100.0 (1104)

* Number of cases in parentheses

DISCUSSION

In this study, the majority of diseases that required laparotomy were due to congenital diseases, followed by acute abdominal conditions. Some diseases showed patterns of age occurrence and sex preponderance at operation. For instance, majority (70%) of intussusception cases were operated on in the post neonatal period and a good proportion (40%) of intestinal obstruction cases at the age of 1 to 4 years, while around half of the cases of intestinal perforation, biliary obstruction, appendicitis and

volvulus had surgery at 5-9 years. More males than females were operated for Hirschsprung's disease, imperforated anus, intestinal obstruction and appendicitis.

A number of factors that influences the duration of surgical operation was identified. They included location of the lesion (e.g. high type of imperforated anus), severity, type of surgical procedure used, ascariasis status, presence or absence of other accompanying disease, whether it was the initial or subsequent operation (e.g. Hirschsprung's disease) etc. The study

Table 3. Duration of operation in minutes taken on laparotomy cases in Yangon Children's Hospital during 1984, 1985 & 1986

Disease	Number of cases	Mean \pm S.D.
intestinal obstruction	131	109 \pm 37
Appendicitis	111	60 \pm 25
Intussusception	81	85 \pm 33
intestinal perforation	29	95 \pm 32
Volvulus	23	114 \pm 35
Biliary obstruction	14	129 \pm 50
Imperforated anus	125	87 \pm 82
Hirschsprung's disease	131	95 \pm 100
Other congenital abnormalities	204	87 \pm 53
Cancer	30	115 \pm 56
Other diseases	188	86 \pm 52
Total	1067	90 \pm 60

showed that, for some diseases, duration of operation depended very much upon the type of operational procedure performed. For instance, in intussusception, while the surgical procedure for resection and anastomosis took 137 minutes, that for manual reduction took only 75 minutes. Also, in our another study described elsewhere (3), duration of operation took longer in cases of *Ascaris lumbricoides* induced acute abdominal conditions than in cases without the *Ascaris*. As such, factors which might be associated with the occurrence and treatment of surgical conditions should likewise be identified and explored.

Table 4. Duration of operation in minutes by surgical procedure for treatment of some common diseases in 1985 & 1986

Disease Surgical procedure	No.	Mean	S.D.	Statistical test
Intestinal obstruction				
Adhesiotomy	31	109	32	t = 1.05
Resection	13	120	31	p > 0.05
Intussusception				
Manual reduction	32	75	18	t = 8.16
Resection	10	137	29	p < 0.001
Volvulus				
Resection	13	126	29	t = 2.22
Untwisting	4	90	26	p < 0.05
Hirschsprung's disease				
Transverse colostomy	38	54	21	t = 23.92
Pull through	20	248	41	p < 0.001
Imperforated anus				
Transverse colostomy	43	52	20	t = 39.59
Pull through	8	236	42	p < 0.001

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