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Pattern of Pediatric Surgical Admission in Yirgalem Hospital Southern Ethiopia

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Abstract

Background: Pediatric surgical admissions are daily practice at zonal hospital. To Design strategy for appropriate management and evidence about magnitude of the problem are crucial, including pattern of disease condition and factor affecting the outcome.

Objective: To analyze the pattern of pediatric surgical admission and factors affecting the outcomes.

Methods: Prospective descriptive case series analysis was conducted from September 2004 - August 2005. Out of 144 children were admitted during study period 134 children's data were analyzed and 10 children excluded from study due to parent's refusal for intervention or discharged against medical advice.

Results: The study showed emergency cases were predominating 73.13% (98) and elective cases were less common 36 (26.26%). Mortality recorded exclusively in children admitted on emergency basis 10 children (7.46%). Acute abdomen was found the leading causes of death in this study (6 children). Delay in presentation also recorded in these children. Author believes that this is one factor that increases the mortality rate. High mortality was also recorded in Toddlers admitted with foreign body in airway (aspiration).

Conclusion: Many emergency and elective pediatric surgical patients can be managed at Zonal Hospital by General Surgeons with acceptable outcomes. Frequent skill training like of usage rigid bronchoscope improves outcome in children with foreign body aspiration. High morbidly recorded in children with trauma of the limbs needs further study.

Keywords: Intussusception; Common age 3-9 month; Late presentation; Delay diagnosis; High morbidity and mortality

Introduction

Pediatric surgery is one of the demanding surgical disciplines. Surgical cares for pediatric patients in developing countries is said to be too expensive to deliver mainly due to economical constraints and burden of non-surgical illnesses [1]. Pattern of pediatrics surgical admission at zonal hospital is poorly documented. So that mortality, morbidity and factors affecting the outcomes were difficult for analysis despite many children with surgical illness have been managed at these levels. The same as Ethiopian tertiary level hospitals, many sick children were found coming to zonal hospitals with variety of surgical diseases (Table 1).

Poor documentation usually makes difficult to assess the problems and design strategy to improve zonal hospitals' setup for these group of patients. Despite long history of pediatric surgical patients' service in YIrgalem Hospital, to the best of author's knowledge, there was no unpublished or published study assessing the admission pattern and performance. Even all over the country, no study was conducted exclusively on this group of patients at zonal hospital level. About three decades ago, Belachew's [2] analysis gave much emphasis on three common surgical disease (intussusceptions, inguinal hernia and appendicitis), at tertiary hospital level. A study conducted by Abebe [3] did not separately analyze pediatric surgical diseases. Miliard's study [1] was to the point; however, pediatric surgical cases managed in a tertiary hospital with much better setup could not represent zonal hospitals. In other words, for a known fact, the finding in tertiary hospital can not be generalized. The object of this study is to analyze pattern of pediatric surgical admission at zonal (rural) hospital with emphasis on common cases and factors affecting the out come.

Material and Methods

This is a case series study conducted on pediatric surgical patients admitted from September 2004 to August 2005 in Yirgalem zonal (rural) hospital in southern Ethiopia, about 315 km away from the capital. Yirgalem hospital is one of highly crowded hospitals in four major clinical disciplines outside Addis Ababa (capital of Ethioopia), which was dependent on Norwegian aid till very recently.

During the study period, a total of 144 children were admitted to the surgical ward and managed. There were 10 parents who refused and failed to give consent for surgical interventions, and as result, these cases were discharged against medical advice and as well excluded from the study. For 134 cases surgical pediatric patients, either of the parent or close family member signed consent for both the surgical interventions and being involved in the study.

Variables included were sociodemographic characteristics, clinical manifestation, diagnosis and out come. Data collecting format was structured as open ended and administered/interviewed by two surgeons including the author prior and after the procedure. When there was language barrier between data collectors and patients or

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Diagnosis	Frequency	Sex ration M:F	Range of age	Average age
Intussusception	19	1:1.1	0.5 – 7 yr	2.35 yr
Extremity trauma	18	2.6:1	0.5 – 12 yr	6.88 yr
Inguinal hernia and PPV	10	All boys	8/12 – 7	3.17 yr
Acute Appendicitis	9	3.5:1	4-12 yr	7.5 yr
Head injury	10	1:1	0.5 – 12	7.05 yr
Head and neck abnormality including neck mass	8	1.6:1	9 month 10 years 3 days	6.65 yr
Anorectal malformation	7	1.3:1	3 – 12 years 10 months	9.3 month
Abdominal trauma	4	4:0	8/12 – 11 yrs	7.5 yr
Foreign body aspiration	4	4:0	1.02 – 8 yrs	5.16 yr
Foreign body swallow	4	4:0	2 – 12 yrs	3.02 years
Acute abdomen excluding intussusception and appendicitis	8	7:1	50 – 60 days	5.5 yrs
Idiopathic hypertrophied Pyloric stenosis	3	3:0	5/12 – 5 yrs	51 days
Scald burn injury	3	2:1	1 – 8	2.22 yrs
Post burn contracture	3	2:1	3 – 5 yrs	4.51
Rectal prolapse	3	1:2	6- 10 yrs	3.66 yrs
Bladder stone and paraphimosis	6	6:0	2/12 – 10 yrs	8.yrs
Other	15	3.6:1		5.7 yr
Total	**134**			

Table 1: Total admitted children.

patient relatives, local nurses and other translators were equally applicable. Completeness and consistencies of data were being checked and revised for errors during data collection. Data were analysis by window Microsoft excel and summarized and presented as simple frequency tables and cross – tabulated to analyze associated factors on the outcome of cases.

Results

A total of 1389 children admitted to the hospital from Sep 2004 - Aug 2005. Out of which 144 (10.36%) were admitted with surgical illnesses. sex ratio showed there were 99 (73.9%) males and the Females were 35 (26.1%), M: F 2.8:1. The range of age of these children was from 0 month to 36 months. The average age is 48 months. Procedure was done for 132 children and 2 children with head trauma but no indication for surgery was managed conservatively.

Data showed emergency case were predominating 98 (73.13%), the rest were planned or elective case. The leading causes of admission were found to be intussusceptions 19 (14.1%), age of this children ranges 10 were male and 9 female, 14 of them between age of 6 months. Duration of the illness range 11 days. Intraoperative findings showed 9 of them had gangrenous ileocolic intussusceptions and right hemicolectomy and ileocolon anastomosis was performed, the remaining 8 children had viable bowel needs only reduction, out of these 8 children the diagnoses were stratified as 5 with ileocolic intussusceptions, 2 with ileoileal and one with colocolic intussusceptions. Half of mortality in this study was recorded in this group of children who admitted more than 3 days of the illness, 5 children (Table 2).

The next common surgical condition in this study was trauma of the limbs 18 (13.4%) males are predominant comparing to female 2.6:1, range of age 6 months, time of presentation range up to 2 days. One death was also record immediately after admission. A one year old girl who presented with extensive degloving injury of left thigh with hemorrhagic shock and she died in few hours after presentation. 9 children from this group came with gangrenous limb and a single child came with amputated lower limb after road traffic accident less than 2 years, the remaining 8 children presented 2 years 2 months after fall accident trauma, all these were come with bamboo splinted and darkened limbs that indicated only for amputation. Next common problem were head injury 10 (7.4%), boys are equally affect with girls,

		Out come			
Diagnosis	**Time of presentation**	**Number of children**	**Complications**	**Death**	**Improving and discharge**
Intussusception	Less than one day	0	0	0	0
	1-2 days	4	0	0	4
	Greater than 3 days	15	1*	5	10
Acute appendicitis	>24 hrs	1		0	1
	1 -2 days	5		0	5
	>3 day	3	2*	0	3
Acute abdomen excluding the above two	>24 hr	1		0	1
	1 – 2 day	3		0	3
Trauma of the limbs	>3 day	4	1***	1	3
	Less than 24 hr	7	1***	1	6
	2- 7 days	4	1**		4
Head injury	> 8 day	7	7**		7
	Less than 6 hr	1		1	0
Trauma of the abdomen	6-24 hr	8		-	8
	More than 24 hr	1		-	1
Acute urinary retention secondary paraphimosis and bladder stone	<6 hr	2	-	-	2
Foreign body swollen & aspiration	6 – 24	2	-	-	2
	Greater than 24 hr	0	-	-	-
Scald burn injury	1- 3 day	3	-	-	3
	> 4 day	2	-	-	2
	> 6	1	-	-	1
IHPS	Less than 6 hr	2		1	1
	6 – 24 hr	1		-	1
	> 24	5		1	4
Rectal prolapse	> 8 hr				
	8 – 24 day	1			1
Total	>24	2	1*	-	2
	> 1 week	0	-	-	
	1 – 2 week	0	-	-	
	>3 week	3	-	-	3
	<1 week	-	-	-	
	1 – 2 week	3	-	-	3
	>3 week	-	-	-	
		98	14	10	88

* Wound infection, ** Extensive wound infection with dead limbs, *** complete wound dehiscence and IHPS-Idiopathic Hypertrophied Pyloric stenosis.

Table 2: Time of presentation and outcome of Children Presenting with common emergency surgical disease.

ages range from months up to 1 year. One mortality record in this group a 5 year old girl who presented with severe head injury died in few hours after admission. In this study, inguinal hernia and common elective surgical disease of patient processus virginals. All are boys, who ranges of age up to 5 years, average 3.1 years no mortality and no morbidity recorded in this group. 9 children were presented with an acute appendicitis, boys are predominant 3.5:1 range of age 4-10 years average age 7 years. Two morbid children had post op wound infection. 8 children were presented acute abdominal condition excluding Intussusception and appendicitis, in this group boys are predominant 7:1, age range from 2 years 1 month, range of presentation 1-3 days. morbidity and mortality also recorded in this group. Death of 9 years old boy who admitted on the day of illness due to generalized peritonitis secondary illegal perforation and the other 5 years old boy need second surgery due to complete wound dehiscence. Head and neck abnormality also another the common elective cases, 8 children were admitted with this condition, range of age 1 month, average of 6 years, males are predominant 1.6:1. The other common finding is Anorectal malformation in 7 children, early neonate also record in this group with imperforate anus; males are predominant 1.3:1, range of age in 1 month. High mortality recorded in children admitted with foreign body aspiration, 4 children admitted with this condition, range of age 8 years 1 month all are boys. Two deaths during unsuccessful removal foreign body end up with two episode of cardiac arrest. Four children admitted with foreign body swallow, all are boys and they managed successfully. 6 boys also admitted with bladder stone and paraphimosis, range of age 6 years 1 month, all are managed successfully. 4 children abdominal trauma all are boys, range of age 3 years 1 month, average of 7 years. The remaining children were admitted with Varity of surgical conditions like post burn contracture, Idiopathic hypertrophied pyloric stenosis, scald burn injury, rectal prolapsed and rarely congenital disorder like sacrococcygeal teratoma. This study result showed Mortality and morbidity were found exclusively on children admitted on emergency basis. The over all mortality rate was 10 (7.46%) and morbidities were in 15 children (Table 3).

Discussion

Pediatric surgery is one of the demanding surgical divisions that need multidiscipline approach. The study analysis showed many pediatrics surgical patients are coming to zonal hospital and managing there. In the study area Predominant admitted children are with emergency conditions different from reference [1] findings, this explains that unlimited for emergency admission and/or refer these children very difficult due to far distance nearby territory hospital with better facility. Study also show boys were predominant in numbers comparing with girls [1], it is due to boys more vulnerable for intussuception [4], inguinal hernias [5] and trauma that were common presentation in this study. Intussusception is the leading condition for admission (Table 1) different from reference. Head injury found the h common cause admission (Table 1) unfortunately 8 of them caused by homicidal and fall accident that can be easily preventable. Awareness of parents might prevent this trauma. Congenital head and neck abnormality with predominantly cleft lip abnormality another common findings in this study. Idiopathic hypertrophied pyloric stenosis is found the less common surgical condition but sex, age and clinical manifestations of study findings the same as reference [6,7]. Challenging condition occurred children with foreign body aspiration and high mortality also recorded in this group. According to reference [8] bronchoscopy may be difficult especially with smooth foreign bodies, in addition poorly trained and inexperienced hand mortality rate can be high. Skill training for surgeons serving at district hospital like usage of bronchoscopy might decrease mortality.

Diagnosis	No of children	Age	Sex	Duration of illness
Peritonitis secondary to perforated ileum	1	4 yr	M	6 days
Degloving injury of left thigh including the leg				
Sever head injury	1	3 yr	M	6 hr
Intussusception	1	4 yr	M	1 day
Intussusception	1	6/12 yr	M	03 days
Intussusception				
Intussusception	1	7/12 yr	F	6 days
Intussusception	1	5/12 yr	F	5 days
Foreign body aspiration	1	8/12 yr	M	4 days
Foreign body aspiration	1	7 yr	M	6 days
Total	1	$1\ ^{3}/_{12}$ yr	M	5 hr
	1	$1\ ^{8}/_{12}$ yr	M	11 hr
	10			

Table 3: Total number of mortality.

50% of mortality in this study recorded in patients admitted with intussusception (Table 3). These children admitted in the hospital on day's onset the illness (Table 3). On references [9-11] confirmed that Delay presentation increase mortality in this children. Awareness of parents, early and effective referral system might decrease mortality in this patients' other factors needs further study. High morbidity found children with trauma of the limbs 9 of them came with dead limbs after managing by traditional healer, they came with bamboo splinted and gangrenous of the limbs. The only option to save them was amputate at different limb level. Train traditional healers their limitation, increase awareness of community prevention of trauma and health facility to treat trauma might decrease incidence of trauma and prevent disabling outcomes.

Recommendation

This study showed pattern of pediatrics admission at Zonal (rural) hospital. The study noticed many children with surgical diseases can be managing at rural hospital. To decrease burden of tertiary level hospitals, and to give a better service to children with surgical illness the set up of rural hospital should improve. Awareness of parents might be crucial to decrease late presentation. Traditional healer should accountable for their action to increase their knowledge and to decrease disabling morbidities. Quality of service also can be increase by frequent train surgeons who are giving service at rural hospital.

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