Pattern of cases and its management in a general surgery unit of a rural teaching institution

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Abstract

Objective: To study the pattern of general surgery cases and their management in a rural teaching institution.

Methods: This descriptive case-series was conducted prospectively in Surgical Unit II at Fatima Hospital and Baqai Medical University, from June 16, 2005 to June 15, 2010. There were 1125 patients in the series who were managed either conservatively or operated upon. All patients with symptoms suggesting a surgical disease and managed as a surgical case were included, while cases that were shifted to other departments and those that left against medical advice were excluded.

Results: The majority of patients had alimentary tract diseases 327 (29.1%), followed by urinary tract diseases 241 (21.4%), hernia 176 (15.6%), superficial lumps 135 (12%), hepato-biliary-pancreatic diseases 102 (9.1%), breast diseases 47 (4.2%), scrotal diseases 37 (3.3%), thyroid diseases 19 (1.7), salivary gland diseases 10 (0.9%), vascular diseases 4 (0.4%), thoracic diseases 2 (0.2%), and miscellaneous 25 (2.2%). A total of 726 (64.5%) patients were managed as elective cases, while 399 (35.5%) were managed as emergency cases. As many as 834 (74.1%) patients were managed by operations and 244 (21.7%) patients by conservative treatment, while 47 (4.2%) patients were referred. Seven patients expired, giving a mortality rate of 0.62%.

Conclusion: The commonest cause of seeking surgical care was alimentary tract diseases, followed by urinary tract diseases, hernias, superficial lumps, hepato-biliary-pancreatic diseases, breast diseases, scrotal diseases and thyroid diseases. Baqai Medical University is catering to the needs of rural population by providing essential surgical care to a broad spectrum of surgical diseases.

Keywords: Alimentary tract, Cholelithiasis, Hernia, Acute appendicitis, Haemorrhoids, Perforation, Carcinoma (JPMA 62: 148; 2012).

Introduction

Pakistan has an estimated population of 173.5 million (July 1, 2010), which is growing at a rate of 2.05% per annum and has a rural vs. urban distribution of 64% vs. 36%.[1] Total registered medical practitioners (basic and specialists) in Pakistan till May 31, 2010 are 142792 (119083+23709), making doctor-to-population ratio of 1:12150.[2] According to the 1998 Census Report, Karachi had a population of 9.2 million in 1998 compared with 5.2 million in 1981, a growth rate of 4.5% per annum; with this growth rate, the estimated population in 2010 is 15.7 millions.[3] The increase of population at this rate is contributing to the growth of slums, shanty towns, traffic congestion and shortage of basic infrastructure and social services. It is becoming very difficult to expand urban services and facilities adequately to cope with the growing pressure of the increasing population. It is estimated that currently about 50 percent of Karachi's population live in slums and shanty towns.[3]

Fatima Hospital is a 500-bed teaching hospital attached with Baqai Medical University, located in Gadap Town. It imparts both undergraduate as well as postgraduate teaching and training. Department of surgery comprises three general surgery units besides the specialties of neurosurgery and orthopaedics; the facilities of paediatric surgery, urology and plastic surgery are not regular. The three surgical units have 50 beds each, with equal distribution of outpatient, operation and emergency days. Fatima Hospital mainly attracts patients from the Gadap Town, which is the largest town of Karachi with rural population. As it is a charity setup, it also attracts patients from other low-income areas of Karachi, rural Sindh, lower Baluchistan and Afghan refugees. Majority of patients belongs to low socio-economic group.

The pattern of diseases varies with the geographical areas, in different races, age groups, social classes and in people with different occupations. Very few local studies are available on the epidemiology,

pattern of diseases and incidence of a particular disease prevalent in the city, province and the country. This study was carried out to find the pattern of cases managed in a surgical unit at Fatima Hospital in the rural locality of Gadap Town, Karachi.

Patients and Methods

This descriptive case-series is a prospective analysis of all patients managed in Surgical Unit II of Fatima Hospital and Baqai Medical University, Karachi. The data were entered into the data sheet of SPSS on a monthly basis, using record from patient's file, admission register and operation theater register. The inclusion criteria were: all patients with symptoms suggesting a surgical disease and managed as a surgical case. These were either admitted through out-patient department (OPD) or emergency department or shifted to surgery from other departments, or operated upon on an outpatient basis. Cases that were shifted to other departments and those that left against medical advice were excluded. The variables noted and analysed were patient's demographic data, provisional and final diagnosis, disease pattern, presentation, mode of admission, mode of treatment, nature of operation, complications and the final outcome. All the data was analysed by SPSS version-16 on computer.

Results

The patients were enrolled from June 16, 2005 to June 15, 2010. During the 5-year study period 1125 patients were managed either conservatively or operated upon. The gender distribution was: 716 (63.6%) males, 409 (36.4%) females. The mean age of the patients were 39.14 ± 16.9 years, range 1 month - 80 years).

The alimentary tract and urinary tract diseases formed the main bulk of the cases, together accounting for 50.5% cases (Table-1). Hernias (15.6%), superficial lumps (12%), and hepato-biliary-pancreatic diseases (9.1%) were the other major diseases. Diseases related to breast (4.2%), scrotum (3.3%), thyroid (1.7), salivary gland (0.9%), vascular (0.4%), thoracic (0.2%), and of miscellaneous nature (2.2%) accounted for the minority of cases. Of the total, 726 (64.5%) patients were categorised as elective cases, while 399 (35.5%) as emergency cases.

As for the ways of management, 834 (74.1%) patients were managed by operations and 244 (21.7%) patients by conservative treatment, while 47 (4.2%) patients were referred. The reasons for referral were mainly lack of proper surgical intensive care unit with ventilator support. The mortality rate in this series was 0.62%.

The most common surgical disease was inguinal hernia (134) (Table-2). This was followed by acute urinary tract infection (106), non-specific abdominal pain (81), haemorrhoids (73), chronic calculus cholecystitis (61), acute appendicitis (54), renal stone disease (44), abscesses (35), anal fissure (30), sebaceous cyst (30), lymphadenopathy (27), acute retention (27), anal fistula (23), intestinal obstruction (22), paraumbilical hernia (21), and hydrocele (19).

In terms of operations performed in the series, uncomplicated hernia surgery (174) was the most common procedure and included herniotomy (9), herniorrhaphy (58), and hernioplasty (107). The second most common procedure was excision of various lumps, including carbuncle. The third on the list was haemorrhoid procedure; this included haemorrhoidectomy (35),

Table-1: Pattern of diseases with mode of presentation and ways of management.

		Presentation		Management		
	Total No. (%)	Elective No.	Emergency No.	Operative No.	Conservative No.	Referred No.
Alimentary tract	327 (29.1)	155	172	208	100	19
Urinary tract	241 (21.4)	99	142	110	119	12
Hernia	176 (15.6)	174	2	176	0	0
Superficial lumps	135 (12.0)	98	37	135	0	0
Hepato-biliary	102 (9.1)	81	21	80	8	14
Breast	47 (4.2)	39	8	36	11	0
Scrotal	37 (3.3)	32	5	37	0	0
Thyroid	19 (1.7)	19	0	11	6	2
Salivary gland	10 (0.9)	6	4	10	0	0
Vascular	4 (0.4)	4	0	4	0	0
Thoracic	2 (0.2)	0	2	2	0	0
Miscellaneous	25 (2.2)	19	6	25	0	0
Total	1125 (100)	726	399	834	244	47

Table-2: List of common diseases, showing the number, group frequency and total frequency.

Disease/Indication	No.	% Group	% Overall	Disease/Indication	No.	% Group	% Overall
Alimentary tract	327	100	29.1	Urinary tract	241	100	21.4
* Non-specific abdominal pain	81	24.8	7.2	* Acute UTI	106	44	9.4
* Haemorrhoids				* Renal stone disease	44	18.2	3.9
* Acute appendicitis	73	22.3	6.5	* Acute retention	27	11.2	2.4
* Anal fissure	54	16.5	4.8	* BPH	13	5.4	1.2
* Fistula in ano	30	9.2	2.7	* Vesicle calculus	12	5	1.1
* Intestinal obstruction	23	7	2	* Non-functioning kidney	8	3.3	0.7
* Carcinoma of esophagus	22	6.7	2	* Urethral stricture			
* Ileal perforation	9	2.8	0.8	* Carcinoma of prostate	8	3.3	0.7
* Duodenal ulcer perforation	7	2.1	0.6	* Renal carcinoma	4	1.7	0.4
* Carcinoma of stomach	5	1.5	0.4	* Carcinoma of bladder			
* Carcinoma of rectum				* Miscellaneous	1	0.4	0.1
* Carcinoma of colon	5	1.5	0.4		1	0.4	0.1
* Appendicular abscess	5	1.5	0.4				
* Miscellaneous	4	1.2	0.4		17	7	1.5
	2	0.6	0.2				
	7	2.1	0.6				
Hernia	176	100	15.6	Superficial lumps	135	100	12
* Inguinal hernia	134	76.2	11.9	* Abscesses	35	25.9	3.1
* Paraumbilical hernia	21	11.9	1.9	* Sebaceous cyst	30	22.2	3
* Epigastric hernia	12	6.8	1.1	* Lymphadenopathy	27	20	2.4
* Incisional hernia	9	5.1	0.8	* Lipoma	18	13.3	1.6
				* Dermoid cyst	9	6.7	0.8
				* Ganglion	4	3	0.4
				* Carbuncle	3	2.2	0.3
				* Miscellaneous	9	6.7	0.8
Hepato-biliary-pancreatic	102	100	9.1	Breast	47	100	4.2
* Chronic calculus cholecystitis	61	68.8	5.4	* Fibroadenoma	14	29.8	1.2
* Acute calculus cholecystitis				* Carcinoma of breast	9	19.1	0.8
* Choledocholithiasis	11	10.8	1	* Breast abscess	8	17	0.7
* Acute pancreatitis				* ANDI	7	14.9	0.6
* Hydatid disease	9	8.8	0.8	* Breast cyst	5	10.6	0.4
* Liver abscess	8	7.8	0.7	* Miscellaneous	4	8.6	0.4
* Carcinoma of pancreas	6	5.9	0.5				
	5	4.9	0.4				
	2	2	0.2				
Scrotal	37	100	3.3	Thyroid	19	100	1.7
* Hydrocele	19	51.4	1.7	* Thyroid cyst	6	31.6	0.5
* Testicular tumor	5	13.4	0.4	* Multinodular goitre	5	26.3	0.4
* Undescended testis	4	10.8	0.4	* Cold nodule	5	26.3	0.4
* Testicular torsion	3	8.1	0.3	* Carcinoma of thyroid	2	10.5	0.2
* Varicocele	2	5.4	0.2	* Toxic adenoma	1	5.3	0.1
* Miscellaneous	4	10.8	0.4				
Salivary	10	100	0.9	Vascular	4	100	0.4
* Submandibular abscess	2	20	0.2	* Varicose veins	3	75	0.3
* Parotid abscess	2	20	0.2	* Haemangioma	1	25	0.1
* Submandibular tumor	1	10	0.1				
* Parotid tumor	2	20	0.2				
* Ranula	1	10	0.1				
* Retention cyst	2	20	0.2				
Thoracic	2		0.2	Miscellaneous	25		2.2

UTI: Urinary Tract Infection; BPH: Benign Prostatic Hypertrophy. ANDI: Aberration of normal development and involution.

Table-3: Spectrum of operations.

	Frequency	Percent
Hernia surgery	173	20.7
Excision	137	16.4
Hemorrhoid procedure	73	8.7
Cholecystectomy	72	8.6
Appendicectomy	54	6.5
Incision & drainage	51	6.1
Exploratory laparotomy	34	4.1
Pyelolithotomy	31	3.7
Lateral sphincterotomy	30	3.6
Prostatectomy*	25	3.0
Fistulectomy	23	2.8
Hydrocele operation	19	2.3
Nephrectomy	15	1.8
Cystolithotomy	12	1.4
Thyroid surgery	11	1.3
Orchidectomy	10	1.2
Mastectomy	10	1.2
Circumcision	10	1.2
Suprapubic catheterization	4	0.5
Orchidopexy	4	0.5
Debridement	4	0.5
Varicose vein surgery	3	0.4
Chest tube insertion	2	0.2
Varicocelectomy	2	0.2
Parotidectomy	2	0.2
Gastrostomy	2	0.2
Miscellaneous	21	2.6
Total	834	100.0

*One patient underwent simultaneous herniorrhphy.

injection sclerotherapy (21), and band ligation (17). The other common operations were cholecystectomy, appendicectomy, and incision-drainage.

Discussion

The spectrum of procedures is generally considered a reflection of disease prevalence in a region. In this series, alimentary tract diseases (29.1%) were the most prominent cause of admission, followed by urinary tract diseases 241 (21.4%), hernia 176 (15.6%), superficial lumps 135 (12%), hepato-biliary-pancreatic diseases 102 (9.1%), breast diseases 47 (4.2%), scrotal diseases 37 (3.3%), thyroid diseases 19 (1.7), salivary gland diseases 10 (0.9%), vascular diseases 4 (0.4%), thoracic diseases 2 (0.2%), and miscellaneous 25 (2.2%). In a report from the American Board of Surgery, the average number of procedures performed by general surgeons were: abdomen (hepato-biliary-pancreatic + hernia) 26%, alimentary tract 16%, breast 14%, endoscopy 13%, skin/soft tissue 12% and vascular 10%. However, genitourinary tract, thoracic and endocrine procedures accounted for 1% each.[4]

Inguinal hernia (11.9%) turned out to be the most common surgical disease in this series, which was line with several other international studies.[4-7] Its cause is mainly occupation related as majority of the people in Gadap Town locality are manual labourers belonging to agricultural and dairy farming, fruit and vegetable market and construction. The next most common disease requiring a surgical procedure was haemorrhoids (6.5%), a finding which is not reported earlier in any rural international series. A high prevalence may be due to dietary pattern lacking fibers resulting in constipation and increased force at defecation, multiple pregnancies or occupation related with prolonged standing. The estimated prevalence rate of symptomatic haemorrhoids in the United States is 4.4% of the adult population.[8] The third most common surgical disease in this series was gallstone disease (6.4%). Abu-Eshy et al reported the overall prevalence of gallstone disease in Saudi Arabia as 11.7%.[9] Gallstone disease remains one of the most common medical problems leading to surgical intervention. Cholelithiasis affects approximately 10% of the adult population in the United States.[10] The risk factors predisposing to gallstone formation commonly observed in this series were multiparous women, obesity, diabetes mellitus, oral contraceptives and cirrhosis.

In this series the most common cause of acute abdominal admission was acute urinary tract infection (UTI) 9.4%, followed by non-specific abdominal pain 7.2%, acute appendicitis 4.8%, acute retention 2.4%, acute intestinal obstruction 2%, ileal perforation 0.6%, and duodenal perforation 0.4%. Ohene-Yeboah in an study from Ghana reported the following 7 conditions as the most common causes of acute abdominal pain requiring admission: acute appendicitis (22.4%), ileal perforation (16.2%), acute intestinal obstruction (12.6%), gastroduodenal perforations (11.0%), non-specific abdominal pain (9.8%), abdominal injures (8.3%) and acute cholecystitis (3.2%).[11] Chianakwana et al in an study from Nigeria reported appendicectomy as the most common emergency operation in 139 patients, followed by road traffic accidents (RTAs) involving 137 patients, gunshot injuries mainly from armed robbery attacks 127 cases, acute intestinal obstruction 92 cases, acute urinary retention 126 cases and priapism 2 cases.[12]

Acute appendicitis is among the most frequent causes of surgical abdominal diseases worldwide.[13,14] Another study from Ghana also reported appendicitis as the most common cause of acute abdomen (23.5%), followed by non-specific abdominal pain (21.4%), acute intestinal obstruction (10.8%), gynaecological causes (9.5%) and peptic ulcer (9.2%).[15] Caterino from Rome reported appendicitis as the most frequent diagnosis (16.4%), followed by non-specific abdominal pain (15.5%), cholelithiasis (12.5%) and abdominal

malignancy (10.3%).[16]

The high prevalence of urinary tract diseases, especially acute UTI (9.4%) and renal stones (3.9%), in this series was mainly due to drinking brakish underground water, less frequent drinking habits, increased perspiration (occupation involves exposure to hot, humid climate), and unhygienic personal condition with increased risk of infection transmission during sexual activity. The frequency of renal stone disease in patients with urinary tract infection was earlier reported from Charsadda, Pakistan, as 18.98%.[17] Acute pyelonephritis is a frequent condition responsible for more than 100,000 hospitalisations per year in the United States.[18]

Skin and soft tissue infections are common diseases, as noted in this series. The spectrum ranges from mild boil to severe necrotising soft tissue infections, as reported in other international studies.[19,20] Similarly, gram-positive bacteria accounted for more than 80% of the cases.[19] Diseases of the breast are common and include problems, related to pregnancy and lactation, inflammatory conditions, non-neoplastic proliferative disorders and neoplasms. Mayun et al reported the pattern of breast diseases as inflammatory non-neoplastic proliferative and benign neoplastic disorders 59.5% and malignant neoplasms 40.5%, with fibroadenoma as the most common benign breast lesion (23.7%).[21] In this series, the pattern was inflammatory non-neoplastic proliferative and benign neoplastic disorders 80.9% and malignant neoplasms 19.1%, with fibroadenoma as the most common breast lesion (29.8%). Breast cancer is the leading cause of cancer-related deaths in Asia and in recent years is emerging as the commonest female malignancy in developing Asian countries,[22] as also noted in this series.

As in this series, Humber & Frecker[5] from rural British Columbia reported appendicectomy and hernia surgery as the top emergency and elective general surgery operations respectively. However, Humber & Frecker[5] also reported gastroscopy overall as the top procedure. Appendectomy was the most common emergency abdominal operation, reported in the international series.[11,15] Awojobi[6] in a 14-year review from rural Nigeria reported external hernia repair (56.1%) as the most common procedure undertaken, followed by excision of superficial lumps (11.5%), while operations for abdominal emergencies, such as intestinal obstruction, peritonitis and ruptured spleen, accounted for 7.7% cases. An earlier study from several district (non-teaching) hospitals from rural areas of Pakistan showed the following spectrum: hernia surgery (8.7%), urinary calculus removal (6.2%), appendicectomy (5%), haemorrhoid or perianal surgery (4%), prostatectomy (4%), abscess drainage (3.5%), gastrointestinal operations (3.1%), excision of skin and subcutaneous lesions (2.9%), hydrocele operation (0.9%), gallbladder/biliary operation (0.6%), breast surgery (0.6%), and scrotal/testicular operation (0.6%).[7]

Rural healthcare setups are generally deficient in skilled medical and surgical professionals, paramedical staffs and medical equipments. Patients are, therefore, referred to larger urban hospitals and tertiary institutions for proper management. This trend is not limited to Karachi and other third world nations, but is also observed in industrialised Western countries like the USA and Australia.[4,5,23] Adding misery to the rural patients are factors like substantial absence from work and income loss, travel difficulties with deficiency of public transport and ambulances, accommodation and meal expenses, drug expenses and family disruption. In this series, 47 (4.2%) patients were referred to urban tertiary care institutions. The referred cases included mostly malignancies (oesophagus, stomach, rectum, kidney, bladder, prostate and thyroid), as well as cases of acute pancreatitis and choledocholithiasis. The reason of referrals were lack of ventilator support in surgical intensive care unit, computerised tomography scan, magnetic resonance imaging, upper and lower gastrointestinal endoscopy, endoscopic retrograde cholangiopancreatography (ERCP), laparoscopic surgery, endourology, nuclear imaging and radiotherapy. The provision of these facilities is a very critical decision. Certainly a medical university with undergraduate and postgraduate teaching needs to provide such facilities, and the patients, whether poor or rich, should receive the gold standard treatment. The poor patients that came to this setup could not afford it, and so the authorities need to devise strategies to choose a balanced approach.

Conclusion

The most common cause of seeking surgical care was alimentary tract diseases, followed by urinary tract diseases, hernias, superficial lumps, hepato-biliary-pancreatic diseases, breast diseases, scrotal diseases and thyroid diseases. Those catering to the needs of rural population by providing essential surgical care to a broad spectrum of surgical diseases, shall also opt for advanced procedure, to ensure standardized treatment even to the poor.

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