General Surgical Emergency Admissions

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Background: Surgical emergencies encompass a large proportion of the Global Burden of Surgical Disease, which according to the World Health Organization (WHO), is around 11%. Therefore, to address these problems, it is first crucial to determine the trends of emergency surgical admission.

Objective: To evaluate the burden of surgical emergencies in our institution and establish the baseline data to improve the management.

Design: A Retrospective Study.

Setting: Salmaniya Medical Complex, Bahrain.

Method: Data regarding emergency surgical admissions in patients above the age of 14 from January 2018 to March 2018 were reviewed from the electronic system (I-Seha). The data were analyzed to determine the most common surgical emergencies, their management, length of stay and mortality.

Result: Three hundred fifty-six emergency surgical admissions from January 2018 to March 2018 were included in the study. Two hundred thirty-five (66%) were males. One hundred eight (30.3%) patients were diseases of the stomach and duodenum, followed by 26 (7.3%) dermatoses, and 22 (6.2%) diseases of the biliary tract. Sixty-one (17.1%) required admission to critical care with an overall average hospital stay of 5.84 days. The mortality rate was 0.84%.

Conclusion: Surgical emergency admissions comprise a significant burden on the healthcare system. This study is a preliminary overview of emergency surgical cases. Further prospective studies are required to evaluate the magnitude of the problem.

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Surgical emergencies could be the large majority of day-to-day workload of surgeons. The global surgical burden of disease has been reported to be 11% by the WHO[1]. In the United Kingdom (UK), emergency general surgery admission form approximately 50% of the overall workload[2]. The pattern of these admissions varies depending on the geographic location. In addition, these patterns change over time; certain diagnoses become more frequent, while the incidence of others decreases. A twenty-five-year study from the UK showed that pathologies such as gallstone and diverticular disease became more frequent, while others such as appendicitis and non-malignant obstruction became less common over time[3]. General emergency surgical admissions are also independently associated with an overall higher risk of morbidity and mortality.

It is important to define the scope and pattern of this burden to improve the delivery of services. The Kingdom of Bahrain does not have any current baseline data regarding surgical admissions. It is crucial to establish these trends to undertake any future quality improvement project in this field.

The aim of this study is to evaluate the burden of surgical emergencies in our institution and establish the baseline data to improve the management.

METHOD

Data regarding emergency surgical admissions in patients above the age of 14 from 1 January 2018 to 31 March 2018 were reviewed from the electronic system (I-SEHA). Data collected included patient's age, sex, mode of admission, unit, admission diagnosis as per Classification of Diseases (ICD-10) codes, date of admission, date of discharge, and status at discharge. Mortality was defined as any in-hospital death occurring within 30 days of hospitalization.

ICD-10 codes were converted into diagnosis based on the first subset in the code as the ones recorded in the electronic system were incomplete. Data analysis was conducted using SPSS version 26, where frequencies, descriptive statistics, and the mortality rate were calculated.

RESULT

A total of 356 patients were admitted under General Surgery. Two hundred thirty-five (66%) were males; male to female ratio was 2:1. One hundred ninety-eight (55.6%) admissions were Bahrainis, 14 (3.9%) were from the Gulf Corporation Countries (GCC), and 144 (40.4%) were of other nationalities.

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Two hundred ninety-five (82.9%) were admitted to the general wards, while 61 (17.1%) required Critical Care on admission. The average length of hospital stay was 5.82 days (SD: 0.78).

According to ICD-10 codes, 108 (30.3%) admissions were classified as diseases of stomach and duodenum, followed by 26 (7.3%) impetiginization of other dermatoses and 22 (6.2%) diseases of the biliary tract, see table 1.

Table 1: Most Common Surgical Admissions

	Frequency (n)	Percent (%)
Diseases of the stomach and duodenum, unspecified	108	30.3%
Impetiginization of other dermatoses	26	7.3%
Diseases of the biliary tract, unspecified	22	6.2%
Carbuncle, unspecified	20	5.6%
Acute cholecystitis	17	4.8%
Acute abdomen	15	4.2%
Anal abscess	12	3.4%
Unspecified transfusion reaction, sequela	12	3.4%
Vomiting following gastrointestinal surgery	7	2.0%
Unspecified injury of unspecified foot, sequela	7	2.0%

There were 3 mortalities, one in January 2018 and two in February 2018. The former was initially admitted to a general ward with a diagnosis of the gastrointestinal stromal tumor, and the latter were trauma cases both requiring Critical Care on admission. There were no mortalities documented in March 2018. The crude mortality during this study period is 0.84%.

DISCUSSION

The results of this study differ from the pattern commonly encountered in other countries. In several studies, the most common condition encountered is the acute abdomen and appendicitis[4,5,6]. In our study, disease of stomach and duodenum was found in 30.3%. In addition, our mortality rate is lower compared to the UK (0.84% vs 4.2%)[7]. This could be due to the larger sample size in the UK study, as well as the variability of care and staffing between centers as multiple trusts were included.

In our study, 17.1% of patients required critical care on admission, and this represents a significant number at our hospital given the limited bed capacity in our surgical high dependency unit (6 beds) and ICU (22 beds). Reducing unnecessary admissions is a priority to optimize the efficiency of care. A potential solution is establishing a surgical assessment unit to deal with this problem. One study demonstrated a reduction in unnecessary admissions, where 44% of referrals were immediately discharged[8]. In addition, a study demonstrated the establishment of a one-stop emergency clinic allowed the majority of referrals to be treated on an urgent out-patient[9]. This could reduce the admission burden on hospitals while still providing adequate and timely care to patients.

The sample size of this study is relatively small and may not reflect the overall pattern of conditions encountered. In addition, compared with other studies, the time-examined is short and does not allow for comments on any changes that occur over time. Moreover, seasonal variation in the number of admissions has been documented in a previous study[10].

The limitations in our study were due to issues in documentation and the study being retrospective. We found during our data collection that the entry methods for surgical admission were inconsistent and non-uniform. This could be due to difficulties encountered with our electronic health record, or variation with data entry attributed to human factor or error. The system was incorporated in 2016, starting in a few departments before being fully adopted. Hence, physicians may still be unfamiliar with how to accurately document and code admissions. The ICD-10 is broad and coding will likely vary between different individuals.

CONCLUSION

The patterns of admissions seen in this study are a stark contrast to what is frequently seen in our center. This is an alarming issue as data that is truly reflective of the surgical workload cannot be established without the correct documentation. We, therefore, recommend tackling this issue through departmental consensus on the coding of emergency surgical admissions. In addition, physicians providing care should be educated on how to appropriately document once a common system is agreed upon. We recommend establishing a uniform system for documenting surgical emergencies to ensure this goal is met.

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