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Research Protocol

Management of Appendicitis in Low Resource Countries. Case of Burundi

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Abstract

Aim: Describe the main causes of a delayed diagnosis of appendicitis in Burundi to contribute to the improvement of its management.

Patients and Methods: It was a retrospective and prospective descriptive study carried out at the University Teaching Hospital of Kamenge (UTHK) over a period of 30 months from March 1st 2018 to August 30 2020. We included in our study all the patients who were admitted for acute appendicitis or one of its complications during the period of the study.

Results: Acute appendicitis and its complications represented 20,79% of all the abdominal emergencies (n = 73). The average age was 27.6 years. The sex-ratio was 1.4. Abdominal pain was the chief complaint. Uncomplicated appendicitis represented 20.79% of all cases while 71.98% were complicated forms among which 38.36% were at the stage of peritonitis, appendicular plastron in 20.55% and appendicular abscess in 15.07%. Other diagnosis accounted for 4.11% of the cases. There was an average delay of 6.36 days between the onset of symptoms and consult at the hospital. The main causes of this delay were self-medication and misdiagnosis in the peripheral healthcare structures. The hospital stay was of 11.5 days in average. The overall morbidity of 17.81% was dominated by superficial surgical site infections. The mortality rate was of 1.37%.

Conclusion: Complicated forms were predominant and were associated with a delayed diagnosis. This could be avoided by raising awareness on the harmful effects of self-medication, delayed consult, and capacity building the nursing staff in the peripheral healthcare structures to ensure effective diagnosis and management.

Keywords: *Appendicitis; Delayed Diagnosis*

Introduction

Acute appendicitis represents of the main causes of emergency admission worldwide [1]. Appendicitis affects all ages but most cases occur during adolescence and early adulthood between the 2nd and 3rd decades of life with a predominance of males [2-4].

The diagnosis must be fast and accurate to avoid complications like perforation, appendicular plastron, abscess and peritonitis [5]. However, the clinical presentation which can be sometimes confusing and the wide array of differential diagnosis in women, children

and elder patients can frequently be the source of misdiagnosis and delayed management. Appendicitis can also evolve to complicated forms potentially lethal. This is more common in developing countries where delayed consult and socio-economic factors such as lack of qualified personnel and equipment compromise the prognosis of a pathology which is often diagnosed at a late complicated stage [6-10].

Aim of the Study

The aim of our study was to describe the main causes of a diagnosis delay of appendicitis in Burundi to contribute to the improvement of its management and the avoidance of complications.

Materials and Methods

It was a retrospective and prospective descriptive study conducted in the departments of General surgery and Anesthesia-reanimation at the University Teaching Hospital of Kamenge. The study took place on a 30 months period, from March 1st, 2018 to August 31st, 2020. We included all the patients admitted for appendicitis or one of its complications during the period of the study.

For the prospective part of our study, the data was collected from the patients by using a pre-established form. For the retrospective part, medical records, surgery logbooks, post operatory reports and entry logbooks of the departments of General surgery and Anesthesia-reanimation.

Data was computed with the Microsoft Word and Excel 2016 software and analyzed with the Epi info software version 7.2.3.1.

Results

3736 surgical procedures have been realized during the period of the study at the UTHK among which 351 were abdominal emergencies. During the period of study, 73 patients were admitted for appendicitis which accounted for 20.79% of abdominal emergencies.

The mean age of our patients was 27.6 years with extremes ranging from 15 days to 85 years. The 11 - 20 years age group was the most represented followed by the 21 - 30 years age group. The male gender was the most represented with 58.9% with a sex-ratio of 1.4.

The mean time of consult at UTHK was 6.36 days with extremes ranging from 1 to 21 days. 15 patients directly consulted at UTHK while 58 patients (79.45%) consulted at peripheral healthcare structures around the 3rd day from the onset of symptoms. For these 58 patients who consulted at peripheral healthcare structures, the diagnosis was missed in the majority of the cases. These patients have been referred or consulted after at UTHK due to the absence of symptoms relief. Furthermore, 19 patients (26.03%) have use self-medication before consulting.

Medical treatment was associated to surgical treatment in 59 patients (80.82%) while the treatment was only medical in 13 patients (17.81%) with an appendicular plastron. One patient had an ultrasound guided drainage. 5 patients had an appendectomy after appendicular plastron cooling down, among which 3 reconsulted after a relapse of the appendicitis.

The retained diagnosis after surgery was an appendicular peritonitis in 28 patients (38.36%), acute appendicitis in 16 patients (21.92%), appendicular plastron in 15 patients (20.55%) among which 2 were diagnosed peri operatively, appendicular abscess in 11 patients (15.07%), appendicular mucocele in 1 patient (1.37%), salpingitis in one patient and a cecal tumor in one patient.

Hospital stay was comprised between 6 and 10 days in most cases. The mean stay was 11.5 days with extremes ranging from 1 to 50 days.

Discussion

Appendicitis represents the most frequent surgical emergency worldwide [2]. During the study period, appendicitis represented 20.79% of acute abdominal emergencies in general surgery.

In our study, 58 patients first consulted in peripheral healthcare structures around the 3rd day of symptoms onset and the diagnosis was missed in most cases. This can be explained by the lack of qualified personnel and adapted equipment and an atypical presentation as well. According to literature, the diagnosis of appendicitis is essentially clinical but it can be hard to find due to the polymorphism of its presentation [11,12].

The mean time of consult at UTHK was 6.36 days. In sub-Saharan Africa, consult delay, self-medication, the use of traditional medicine and difficult accessibility to healthcare structures are usual and cause a diagnosis delay [13].

The retained diagnosis after surgery was appendicular peritonitis in 28 patients (38.36%), acute appendicitis in 16 patients (21.92%), appendicular plastron in 15 patients (20.55%), appendicular abscess in 11 patients (15,07%), appendicular mucocele in one patient (1.37%), salpingitis in one patient and a cecal tumor in one patient. These complications can be associated with a delayed diagnosis which is itself associated with an advanced stage of the disease and a higher morbidity [14]. According to Bickell., *et al*. the risk of complications is negligeable during the first 24 hours following the onset of symptoms while it slightly increases between 24 to 36 hours and rises to 6% in patients that are left untreated after 36 hours from the onset of symptoms [15].

Limitations of the Study

This study was confronted to lacking data in some medical records especially for the self-medication part.

Conclusion

Despite that the diagnosis of appendicitis is essentially clinical, the majority of patients in our study has been seen at complicated stages. This delay of diagnosis has mainly been caused by a consult delay, self-medication and misdiagnosis in peripheral healthcare structures. This situation can be avoided by raising awareness on the harmful effects of self-medication, delay consult and capacity building of the nursing staff in peripheral healthcare structures to ensure effective diagnosis and management.

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