ORIGINAL ARTICLE

Perforation rate of appendicitis and negative appendectomies in children in Mankweng Hospital

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Abstract

Introduction: Appendectomy is a common emergency surgical procedure performed in children. Distances to surgical departments in Limpopo, delays in transportation impose unintentionally conservative initial managements before patients arrive at theatres. Aim: To find out how many children (under of age 15 years) had histologically proven appendicitis, how many had a normal appendix & what was the outcome of treatment in respect of mortality and wound infections. Method: A retrospective study from January 2004 to December 2007 carried out in the Mankweng Hospital. Cases of laparotomies for appendicitis of all children were retrieved from the hospital archives. Full blood count was done in all patients.

Results: The total number of children included in this study was 71, male: 46, female: 25. Histology: acute appendicitis reported in 65 cases, mucocele 1, schistosomiasis 1 and normal appendix in 4 cases. White Blood Cell count was raised in 58 patients (56 in patients with appendicitis, 2 in patients with a normal appendix). Perforated appendix with peritonitis was found in 30 cases. Midline incision was done in 30 patients and local incisions in 41 cases. Wound infection occurred in 18 patients (25.35%). The time of referral to Mankweng hospital: 2 days to more than 7 days from the beginning of symptoms.

Conclusions: Many paediatric patients with appendicitis in Limpopo Province came to Mankweng hospital very late; at least 2 days after symptoms began. The perforation rate of appendix was 42% and a normal appendix 5.63%. White Blood Count was raised in 86% in the group of patients with acute appendicitis and in 50% of those with a normal appendix.

1 | INTRODUCTION

Appendicitis still creates diagnostic and therapeutic problems and rate of complications
PERFORATION RATE OF APPENDICITIS AND NEGATIVE APPENDECTOMIES IN CHILDREN IN MANKWENG HOSPITAL

or mortality is too high for present standards. Intensive search for better diagnostic measures is continued for many years. Early applied surgical treatment should reduce a number of complications or mortality, but relatively high rate of negative laparotomies also dissatisfies patients and operating surgeons. Recently reintroduced conservative treatment with a new generation of antibiotics and a swift conversion to surgery became appealing policy. Historical pre-antibiotic era of conservative management of appendicitis with its high mortality does not discourage modern advocates. Patients in Limpopo are referred to hospital very late in many occasions, which increases rate of perforations and generalized peritonitis or less frequently a periappendicular inflammatory mass but also unexpectedly a peripontonitis. Distances to surgical departments in Limpopo, delays in transportation impose unintentionally conservative initial managements before patients arrive at theatres.

2 | AIM

To find out how many children (under of age 15 years) during performed laparotomies had appendicitis, a perforated appendix with peritonitis, how many had a normal appendix & what was the outcome of treatment in respect of mortality and wound infections.

3 | METHOD

A retrospective study from January 2004 to December 2007 carried out the Mankweng Hospital. Cases of laparotomies for appendicitis of all children were retrieved from the hospital archives. Laparotomies for elective appendectomies or a periappendicular mass were excluded from this study. Full blood count (FBC) was done in all cases and antibiotic Cefoxitin was given before the operation to all patients. All appendectomy tissue was submitted for Histology.

4 | RESULTS

The total number of children included in this study was 71, male: 46, female: 25. Documented histology investigations: acute appendicitis reported in 65 cases, mucocele 1, schistosomiasis 1 and normal appendix in 4 cases (male 3, Female 1). White Blood Count was raised in 58 patients (56 in patients with appendicitis, 2 in patients with a normal appendix). Perforated appendix with peritonitis was found in 30 cases. Midline incision was done in 30 patients, local incisions in 41. Wound infection occurred in 18 patients (25.35%). No mortality. The time of referral to hospital: 2 days to more than 7 days from the beginning of symptoms.

5 | DISCUSSION

Appendectomy is a frequent emergency surgical procedure performed in children. Appendicitis is a common disease in children in developed and developing countries and as a rule requires surgical treatment. Most of the time diagnosis is made on a clinical basis, supported by some blood investigations: White Blood Count (WBC), C-reactive Protein (CRP) or imaging studies like Ultrasonography (US), Computed Tomography (CT scan) or Magnetic Resonance Imaging (MRI) according to the availability of such equipment at the institution. Search for perfection of diagnostic processes used for appendicitis is still very dynamic and every year brings new information in this regard, for example; new markers of inflammation for appendicitis, sulesomab, a radiolabeled antigranulocyte antibody imaging agent and others.

Mankweng Hospital (MH) is a tertiary referral institute receiving patients from all district hospital
of Limpopo province, South Africa especially after office hours. MH accepts patients from very far, even from a distance 300 km of rural areas. Most of the time admitted patients are in a very late stage of their diseases after attending traditional healers, clinics and peripheral hospitals, which do not have surgical facilities. These circumstances differ from situation of patients in the developed countries with short distances to surgical departments and early diagnosis followed by prompt surgery.

Presently, most of developed centres use US, CT, MRI scans and blood tests for diagnostic processes\(^{(10)(11)(15)}\) Which have established role to play, but still controversy exists if they really are so helpful\(^{(12)(16)}\). Blood tests (WBC, CRP) are not specific and do not play important role and could not reduce a number of negative laparotomies\(^{(9)}\). In our study, White Blood Count was raised in 86% (56/65) in the group of patients with acute appendicitis and in 50% (2/4) of those with a normal appendix. The benefit of US & CT for diagnosing of appendicitis in children is affirmed in many articles\(^{(10)(17)(18)}\) but some author questions the value of theses investigations in paediatric patients with appendicitis\(^{(12)(16)}\). We would like to compare particularly the time factor in delay of surgery, which was significantly longer in Limpopo than quoted in literature from the developed countries. In spite of the late stage of diseases of our patients and well established clinical picture we still had 5.63% of normal histological appendixes relatively low rate of negative laparotomies in comparison to other literature found 3.06%, 10-20%, 51.3%\(^{(16)(19)(20)}\) in spite of being short of sophisticated radiological equipment. Perhaps, delays in reporting to our hospital in Mankweng better delineated the clinical picture and therefore negative laparotomies were less frequent. Predictably the rate of perforation was higher (42%) but surprisingly it was comparable to those reports from other institutions utilizing modern radiological equipment 35.08%(range 22-62%)\(^{(21)}\). Possibly the rate of perforation is influence also by other reasons rather than from the delay, it depends also on some other factors like specific immunity of patients, specific bacterial flora, genetics or habitual behaviour of patients.

Children respond to appendicitis in a different way than adults although it is not so clear\(^{(19)}\). Differences in genetics are reported to play some role in the outcome of appendicitis\(^{(21)}\). In one report, appendix rupture was higher in Asian and Black children in contrast to white\(^{(21)}\), in other study there was no such differences\(^{(22)}\). Therefore we would speculate that HIV status, genetic background and bacteriological environment could play role in our patients. Research on these aspects could be very interesting. Does differences in a bacteriological and genetics state in different geographical areas could influence results, rates of perforations, rates of periappendicular masses, abscesses or generalised peritonitis in appendicitis?

Conservative management of appendicitis was a gold historical standard, but for at least 100 years the surgical treatment is commonly accepted as the best of choice strategy. Our patients with a long time before surgery were not treated at all in the beginning of disease or treated only conservatively with antibiotics in Limpopo peripheral hospitals where surgery was not available.

In general, percentage of spontaneously self-limiting cures of appendicitis is unknown, but percentage of periappendicular masses/abscesses and perforations could be estimated and could approximately illustrate the process of natural healing. It was in one literature reported about 8,3% of periappendicular masses, when a perforation rate was four times higher about 32.5%\(^{(23)}\). The wounds infection rate of our patients was 25.35% (18/71).

**6 | CONCLUSIONS:**

Many paediatric patients with appendicitis in Limpopo Province come to hospital very late; at least 2 days after symptoms began.

The perforation rate of appendix was 42% and a normal appendix was found in 5.63% .White Blood Count was raised in 86% in the group of patients with acute appendicitis and in 50% of those with a normal appendix

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REFERENCES


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