Post-appendectomy Infected Wounds and Ideal Management
A Retrospective Study

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الخلاصة

خلفية البحث : تصنف العمليات الجراحية البطنية تقليديا الى عمليات أختيارية و أخرى طارئة و كلاهمها من الممكن أن يتبع بعدوى جروح العمليات . وفيما تعتبر عدوى الجروح في العمليات الأختيارية من غير الشائعة فأنها من المضاعفات المتوقعة و المقبولةفي جراحة الطواري كونها عادة ما تكون ملوثة و تجرى بدون تحضير قياسي لما قبل العملية مع وجود دافع للتداخل الجراحيالسريع .

الأهداف : تهدف هذه الدراسة الى مقارنة نتائج أستخدام نظامين لعلاج عدوى جروح أستئصال الزائدة و تقييم الفائدة المرجوة من أستخدام المضادات الحياتية حقنا بالوريد .

الطريقة : قيمت هذه الدراسة (108) مصابا بعدوى جروح أستئصال الزائدة على مدى ثلاث سنوات في مستشفى الحلة التعليمي العام . تم أستثناء كل الحالات التي كانت فيها الزائدة غير ملتهبة أو كان المريض يتعاطى المضادات الحياتية ما قبل العملية لأي سبب كان . كان النظام العلاجي (أ) مكونا من تبديل ضماد الجروح بضمادات مطهرة و حسب الحالة بينما كان النظام العلاجي (ب)مكونا من تبديل ضماد الجروح بضمادات مطهرة و حسب الحالة مع أضافة المضاد الحياتي المترونيدازول (500) ملغم وريديا ثلاث مرات يوميا مع السيفوتاكسيم (1000) ملغم وريديا مرتين يوميا . تم توزيع المرضى بصورة عشوائية في تجربة مفردة التعمية على النظاميين العلاجيين (أ) و (ب) لغرض تقييم النتائج. تم متابعة المرضى لمدة معدلها (50) يوما .

النتائج : كانت هناك نتائج مفيدة بأستخدام النظام العلاجي (ب) في علاج عدوى جروح عمليات أستئصال الزائدة المثقوبة و ذلك بدلالة تناقص في عدد الضمادات المستخدمة وفي فترة رقود أقل في المستشفى . لم تكن النتائج كذلك عند معالجة عدوى جروح عمليات أستئصال الزائدة غير المثقوبة .

الأستناج :أستنادا الى مراجعة الدراسات و التقارير السابقة التي تناولت نفس الموضوع فأنه من المستحسن أستخدام علاج المضاد الحياتي الأحترازي قبل أجراء العملية و لكن هذا لا يتم العمل به في ممارستنا الجراحية . أن غسل الجروح بالمطهرات بعد أستئصال الزائدة المثقوبة مباشرة مفيد لمنع حدوث عدوى الجروح . يوصى بأن النظام العلاجي (ب) يجب أن يستخدم لعلاج عدوى جروح أستئصال الزائدة المثقوبة تحديدا.

Abstract

Background : Abdominal operations are traditionally classified into elective and emergency procedures both of which may be complicated by postoperative wound infections. Although postoperative wound infection is usually infrequent following elective procedures, it is an anticipated and acceptable complication of emergency surgeries as these operations are usually of a contaminated nature with no standard preoperative preparation associated with an urge to operate.

Objectives : This study tries to compare the results of a two adopted regimes to manage post-appendectomy wound infections in regard to the significance of using parenteral antibiotics.

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Methods : This study had evaluated (108) patients with clinical postoperatively wound infections over a period of (3) years in Al-Hilla General Teaching Hospital. All cases with normal appendices and those on preoperative antibiotics therapy for any reason had been excluded from the study. Two treatment regimes had been evaluated : Regime (A) consisting of changing antiseptic wound dressings only while Regime (B) consisted of changing antiseptic wound dressings combined with parenteral administration of intravenous metronidazole (500) mg thrice daily with intravenous cefotaxime (1000) mg twice daily. The study group had been allocated to a randomized single-blind trial to assess the outcomes. Patients were followed–up to an average of (50) days.

Results : There is a beneficial effects of adopting Regime (B) in the management of infected wounds following perforated appendectomies in terms of reducing the number of dressings change and the period of inpatients hospitalization . This was not the case with infected wounds following non-perforated appendectomies.

Conclusion : According to the literature reviewed, in order to prevent or reduce the rate of post-appendectomy infected wounds it is recommended to use preoperative prophylactic antibiotics which is not a routine in our practice.Wound irrigation with antiseptics may be beneficial in prevention of wound infection following complicated appendectomy. Regime (B) of treatment should be reserved for infected wounds following complicated appendectomy.

Keywords : Appendectomy, Infected wounds, post-appendectomy, Babylon

Introduction

Acute appendicitis is the most common abdominal surgical emergency encounteredin clinical general surgery.The standard worldwide treatment is urgent appendectomy. As with other general abdominal operations post-appendectomy wound infection is a frequent and acceptable outcome. Post-appendectomy wound infection varies from (3%) to as high as (60%) according to the type of pathology involving the appendix [1-3]. Certainly, post-appendectomy wound infection constitutes a source of distress to the patient and the responsible surgeon together besides the cost-effects on the health care system [4-6]. For a long time the management of these infected wounds varies considerably and more than not had been managed empirically depending on the personal experience of the surgeon concerned. Reviewing the literature showed that there are many works and reports investigating the problem of post-appendecyomy infected wounds. Some of these reports are sometimes of contradicting conclusions regarding the best choice of treatment [2-4]. This study tries to evaluate the significance and efficacy of two adopted management regimes. Regime (A) consisted of frequent dressings change

alone while Regime (B) consisted of frequent dressings change combined with parenteral antibiotics.

Patients and Methods

This study was conducted over a period of (3) years from 19/2/2009-19/2/2012 in the surgical wards of Al-Hilla General Teaching Hospital. We included all cases of clinically evident post-appendectomy infected wounds and excluded all cases with normal intraoperative appendicesand those who were on antibiotics therapyfor any other reason before appendectomy. All cases of established post-appendectomy wound infection which had been included in this study had been managed with normal saline (0.9%) wound irrigation followed by application of antiseptic dressings with povidine-iodine solution (10% in alcohol). The regimes we adopted were Regime (A) : to have frequent antiseptic dressings change alone and Regime (B) : to have frequent antiseptic dressings change combined with administering parenteral antibiotics in a formula of metronidazole (500) mg thrice daily intravenously + cefotaxime (1000)mg twice daily intravenously. Regime (B) was used until all clinical features of wound infection had subsided. In this study we randomized all patients with post-appendectomy infected wounds in a single-blind trial to be treated on Regime (A) or Regime (B).Our criteria to evaluate the success of both regimes were the period of inpatient hospitalization till discharge and the rate of dressings change needed per day. Change of antiseptic dressings was determined by the medical staff according to the wound discharge. The average of dressings change ranged from (1-6) times daily. This study followed patients until evident clinical cure of wound infection and their discharge to home. All patients had been seen in the outpatients clinic for an average follow-up period of (50) days.

Results

During this study a total of (721) appendectomies were reviewed. The pathologicaltype of appendicitis encountered among this group was as follow : (364) with catarrhal appendicitis , (258) with severe appendicitis and (99) with perforated appendicitis. Postoperative wound infection occurred in a total of (108) patients which is equal to an infection rate of (15%). Cases of catarrhal appendicitis accounted for (3%) while severe appendicitis accounted for (18%) and perforated appendicitis accounted for (52%). Table (1) demonstrates these results.

Table(1) showing post-appendectomy wound infection and patients randomization to treatment regimes.

Appendicitis	Number	Infected wounds	Randomization to regimes Regime (A)	Regime (B)
Catarrhal	364	11 (3%)	5	6
Severe	258	46 (18%)	10	36
Perforated	99	51 (52%)	25	26
Total	721	108 (15%)	37	70

Due to the relatively little number of infected wounds following appendectomy for catarrhal appendicitis these were grouped with the severely appendicitis for ease of analysis which means that all cases of catarrhal appendicitis had been delt with as cases of non-perforated appendicitis.
Table (2) shows the mean of derssings change and the mean of inpatient hospitalization for the perforated and the non-perforated appendectomies complicated by postoperative wound infection according to the adopted two regimes of treatment in this study.

Table (2) showing mean of dressings change, mean of inpatients hospital admission for the study group.

Appendicitis and Regime	Number of patients	Mean of dressings change /day	Mean of inpatient admission
Non-perforated			
Regime (A)	15	3	6
Regime (B)	42	2	5
Perforated			
Regime (A)	25	5	13
Regime (B)	26	3	8

We observed that in wound infections following non-perforated appendectomy there was no remarkable significance of using parenteral antibiotics regarding the mean of dressings change or the mean of inpatient hospitalization ($p > 0.05$) whereas in theperforated appendectomies group the mean of dressings change was significantly lower in Regime(B) : 3 versus 5. Similarly, the mean of inpatient hospitalization was remarkably lower : 8 versus 13 ($p < 0.05$). Of the whole group receiving antibiotics (42+26=68) in Regime (B) we got only (5) patients who developed some drug related side-effects problems : (4) developed mild to moderate diarrhea but they nevertheless continued parenteral antibioticstill evident clinical resolution of their infections. Only one of these five patients developed some sort of drug allergy which necessitated withdrawal of antibiotics.

Discussion

This study tries to assess whether there is any significant role of using parenteral antibiotics in the management of post-appendectomy wound infections. It have revealed a beneficial effect of parenteral metronidazole (500) mg intravenously thrice daily combined with cefotaxime (1000) mg intravenously twice daily in management of wounds infections following perforated appendectomy. There are many reports that had investigated the role of prophylactic antibioticsand it is universally accepted that these have a remarkable role in reducing post-appendectomy wound infections [1-7]. Yet, there are less studies that investigated the role of antibiotics in the management of established wound infections following appendectomy. There are different regimes of antibiotics use but we preferred to study those antibiotics which are most commonly used in our hospital :metronidazole and cefotaxime. There are many reports that recommend the use of a combination of a cephalosporin with metronidazole over the use of other combinations including an aminoglycoside or quinolone with a cephalosporin [8-9]. It is universally agreed that metronidazole is the antibiotic of choice in cases of perforated appendicitis [1,2,5,10,11,12]. There is also one study that had disclosed an equal efficacy between oral and parenteral metronidazole [13]. We reported a rate of post-appendectomy wound infection of (3%) after catarrhal appendectomy and of (52%) following appendectomy for perforated appendicitis which are consistent with other studies [1,2,5]. An important aspect in the prevention of post-appendectomy wound infection is the answer to the question of whether to leave the wound open or closed. Lemieur et al reported that primary closure following perforated appendectomy had a fourfold increase in the rate of re-admission , a fivefold increase in wound infection and twice the period of inpatients hospital stay when compared with primary wound closure following non-perforated appendectomy.They had cited the recommendation for leaving the wound open following perforated appendectomy[14]. This had been also cited by other workers [15,16].With the advent of laparoscopic surgery there have been many workers comparingtraditional open versus laparoscopic appendectomy [17,18 , 19] . Literature had cited many other methods in an attempt to prevent or reduce the rate of wound infection following appendectomy. One of these is the pressurized irrigation of the subdermal tissues in complicated cases [20]. Other one was the infiltration of the site of incision with (1) gram of metronidazole which had been proven to be influencial in reducing the rate of wound infection from (12%) to (1%)[21] .

Conclusion

This study has shown that the use of antibiotics as a combination of metronidazole (500) mg intravenously thrice daily with cefotaxime (1000) mg intravenously twice daily usedto treat post-appendectomy wound infection is effective in cost-reduction in terms of the number of dressings change and inpatient stay. Nevertheless, this regime seems unsuitable for infected wounds following non-perforated appendectomy. We do recommend also the use of prophylactic antibiotics, wound irrigation and/or infiltration of metronidazole in the incision tissues according to the studies and reports we had reviewed.

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