Preoperative use of analgesia in appendicitis

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ABSTRACT

الأهداف: تحديد تأثيرعقار الديكلوفيناك صوديوم (DS) المسكن للألم في إخفاء تشخيص التهاب الزائدة الدودية.

الطريقة: تم إجراء دراسة تجريبية في مستشفى ابن سينا التعليمي بالمكلا – اليمن، في الفترة من نوفمبر2006م وحتى مارس 2007م. جُمعت المعلومات باستخدام استبيان مع معاينة المرضى خلال فترة تنويمهم قبل إجراء العملية.

النتائج: شملت الدراسة ثمانين مريضا (40 منهم كحالات و40 كضابطة) وأظهرت النتائج إن معظم الأعراض: (ارتفاع في درجات الحرارة (الحمى)، فقدان الشهية للطعام، غثيان، وتقيؤ)، والعلامات مثل: (الألم عند اللمس، آلام في الساد والعضلة الخصرية، والوقاية الموضعية والتيبس)، والتي لم تختفي بعد تلقي عقار الديكلوفيناك صوديوم (DS). وبلغت القيمة الاحتمالية (p>0.05) مريضاً، في حين إن العلامات الأخرى (الألم) والعلامات (إرتداد الألم عند اللمس) تم إيقافها بعقار الديكلوفيناك صوديوم (DS)، أن أكثر الأعراض شيوعاً بالنسبة للمجموعة التي أعطيت دواء لمجرد إرضاء المريض والذين تلقوا الديكلوفيناك صوديوم (DS)، كان الألم بنسبة (100%) مما يظهر انخفاضاً واضحاً في شدته بالنسبة للذين تلقوا عقار الديكلوفيناك صوديوم (DS) كمسكن بنسبة (72.2%).

خاتمة: هناك أعراض تختفي باستخدام الديكلوفيناك صوديوم (DS) وأخرى لم تتغير. وبشكل عام فإن استخدام الديكلوفيناك صوديوم (DS) للمرضى الذين يعانون من ألم الزائدة الدودية لا يغير من اتخاذ القرار المتعلق بالتشخيص أو المتعلق بالعلاج بالنسبة لهؤلاء المرضى.

Objective: To determine the influence of diclofenac sodium (DS) on masking the diagnosis of acute appendicitis.

Methods: A prospective, experimental study was carried out in Ibn Sinna General Hospital, Mukalla, Hadramout Governorate, Yemen from November 2006 to March 2007. The data were collected using a well designed questionnaire, with observation during the period of admission, prior to the operation.

Results: This study includes 80 patients (40 as cases, and 40 as controls), and the results revealed that most of the symptoms (fever, anorexia, nausea, and vomiting), and signs (tenderness, obturator and psoas signs, local guarding, and rigidity), were not hidden by DS (p>0.05), while other symptoms (pain), and signs (rebound tenderness, Rovsing's, and pointing) had been hindered by the use of DS. The most common presenting symptom in the placebo and DS group was pain (100%), which showed a marked decrease in severity in those who received DS as analgesia (72.2%).

Conclusion: Some of the symptoms, and signs of acute appendicitis were masked by the use of analgesia, while others were not. In summary, DS did not influence the diagnosis or management of acute appendicitis.

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Due to the problems of medicolegal malpractice claims, the variability of history and clinical manifestations of acute appendicitis should be taken into consideration in order to avoid the delayed, or missed diagnosis.[1] Previously, analgesia was not allowed, as it was believed that it might mask the symptoms and signs of acute appendicitis. Recently, this document has been challenged. In the first instance, the patient with acute abdominal pain should be given adequate analgesia, preferably morphine, intravenously before the physical examination. Concerns that this may mask physical signs are totally unfounded, and have been excluded by clinical trial. Analgesia medication is nowadays considered an integral part of patient resuscitation, as it minimizes stress responses, and facilitates patient

cooperation during physical examination.[2] Although recent literature denied interference with symptoms and signs of appendicitis upon use of analgesia in the preoperative period, still some surgeons believed that early analgesics might interfere with accuracy of diagnosis, and so with the management of acute appendicitis.[3] Diclofenac sodium (DS) is one of the non-steroidal anti-inflammatory drugs (NSAIDs).It has proved to be valuable as an analgesic, antipyretic, and anti-inflammatory. As with other NSAIDs, its mode of action was unknown, and its ability to inhibit prostaglandin synthesis however, may be involved in its anti-inflammatory activity, as well as, contribute to its efficacy in relieving pain related to inflammation. With regard to its analgesia effect, DS is not narcotic.[4] Pain is a subjective experience usually due to an underlying organic lesion. It varies from person to person, and within any given individual as a result of the interplay of biological, psychological, and environmental factors.[5] Uses of DS in the emergency department for patients, who present with abdominal pain before surgical consultation, has remained controversial. Due to the fear of masking the physical signs, and interfere with diagnosis and treatment of the patients, many surgeons believe that analgesia should not be given.[6] Recently, it was proven that early administration of buccal oxycodone, provides significant pain relief to children with acute abdominal pain, without adversely altering the clinical signs, or obscuring the surgical diagnosis.[7] Some researchers even indicated that early pain relief actually facilitates diagnosis of acute abdominal pain.[8] We therefore, aim to determine the influence of DS on masking the diagnosis of acute appendicitis.

Methods. This is a prospective, experimental, single-blinded hospital-based clinical trial, carried out in Ibn-Sinna Teaching Hospital, Mukalla, Hadramout Governorate, Yemen, from November 2006 to March 2007, with the null hypothesis, assuming that there is no masking of diagnosis of acute appendicitis upon using the analgesia DS. The study population was age-matched, with 40 patients as cases, and 40 patients as controls with the ratio of 1:1. The sample included all patients more than 10 years old, males and females who arrived in the emergency room presenting with acute onset of severe lower abdominal pain, of more than 5 in a 10-cm visual analogue scale (VAS), with 6 or less hours duration, suspected of acute appendicitis, as diagnosed by the attending resident surgical doctor. Other patients with other etiologies of abdominal pain were excluded (for example, renal colic, biliary colic, peptic ulcer, respiratory, and cardiovascular pain). The patients were divided into 2 groups on a random basis decided by the surgeon, one group received the drug DS 75 mg intramuscular (group I), while the other group received the placebo management (dextrose or normal saline) intravenous (group II), and evaluation of severity of pain was carried out by use of pain VAS at one and 6 hours. Taking into consideration the ethical viewpoint, obtaining verbal consent from the patients, regarding DS as a safe drug, were used in many medical conditions. As well as a manager document have been stated regarding an official approval and permission to perform this experimental study. The data were collected using a well-designed questionnaire with observation during the period of admission prior to the operation.

The statistical analysis was calculated using Epi-info 2002 with confidence level 95%, study power 80%, expectation of masking of clinical picture in analgesic group, 10% by suspicion as there is controversy in previous studies,[9] with relative risk ratio of 4:1. Data analysis were carried out searching for confidence interval, relative risk, and *p*-value. Excel program was used for data presentation.

Results. Forty patients received an intramuscular injection of DS (group I), and 40 patients received an intravenous injection of placebo (group II). The 2 groups of patients were comparable with respect to age, and the clinical presentation of acute appendicitis. All patients in both groups underwent surgery (appendecectomy), and the diagnosis revealed inflamed appendix after operation, except 6 patients in group I, and 2 in group II were diagnosed as perforated cases. The data in **Table 1** indicates that pain was the only symptom, which was relieved by the use of DS, so the null hypothesis was rejected in relation to masking of pain after use of DS with $p=0.001$, however, there is no masking of anorexia, nausea, vomiting, and fever after use of analgesia with $p>0.05$. With regard to the signs, such as, tenderness, obturator sign, psoas sign, and local guarding, and rigidity after the use of analgesia, there were no masking of these signs with $p>0.05$. However, these signs remained in the patients of group I, even after the use of DS. Null hypothesis is rejected in relation to other signs, and there are masking of rebound tenderness, pointing sign, and Rovsing sign, as shown in **Table 2**. The most common symptoms in group I (82.5%), and group II (87.5%) after pain was nausea (30%), while least common symptom in both groups was fever (25%). While the most common sign was rebound tenderness in both groups represented by 100% in group I, and 97% in group II. In group I, 44.3% had either been relieved, or had a decrease in severity of pain during the first hour, namely, the VAS became less than 5, while another 49.9% of them had no pain within 6 hours from the time of administration of the drug.

Table 1 - The influence of diclofenac sodium on symptoms and signs of acute appendicitis.

Symptoms	Analgesic group	Placebo group	Relative risk	Confidence interval	*p*-value
Pain relieved	36	8	4.5	2.5-8.4	0.001
Anorexia	32	31	1.03	0.82-1.3	>0.05
Nausea	33	35	0.9	0.75-1.13	>0.05
Vomiting	26	30	0.87	0.65-1.16	>0.05
Fever	12	10	1.2	0.59-2.45	>0.05
Tenderness	24	25	0.96	0.68-1.36	>0.05
Obtrutor	16	8	2	0.97-4.14	>0.05
Psoas	15	17	0.88	0.51-1.51	>0.05
Local guarding and rigidity	11	10	1.1	0.53-2.3	>0.05

Table 2 - The influence of diclofenac sodium on signs of acute appendicitis.

Sign	Analgesic group	Placebo group	Relative risk	Confidence interval	*p*-value
Rebound tenderness	26	34	0.76	0.59-0.99	0.07
Pointing	23	13	1.77	1.05-2.98	0.0431
Rovsing	14	26	0.54	0.33-0.87	0.013

Discussion. In Taiwan at Shin Kong Wu Ho-Su Memorial hospital,[9] a study showed that there was no difference in the accuracy of surgical decision-making, regardless of whether patients received analgesics or not. They concluded that preconsultation use of analgesics in the emergency department with a final diagnosis of appendicitis, is not associated with a longer delay to operative intervention, and is not associated with an increased rate of perforated appendicitis,[9] and this coincides well with our results. In India,[10] another study showed that no statistically significant difference was found between the 2 groups' pain score, the number of patients who needed analgesic, and the amount and the number of doses administered. Another study demonstrated, that patients with clinical signs of appendicitis treated with morphine, had significant improvement of their pain without changes in their physical examination.[11] Our results showed, that the pain subsided in those who received DS with p=0.001. This result was similar to a study carried out in Canada in 2000,[12] and in Taiwan in 2003.[13] Most patients of group I had shown a decrease in the severity of pain within 2 hours (38.8%), after administration of DS. The type of analgesia plays a role in determining the pain response to analgesia, namely, morphine, which effectively reduces the intensity of pain among children with acute abdominal pain although it does not seem to impede the diagnosis of appendicitis.[14] On other hand, anorexia, nausea, vomiting, and fever were not masked after use of DS with p>0.05. With regard to the signs of appendicitis (tenderness, obturator sign, psoas, and local guarding and rigidity), these were not relieved after use of DS, and this result was consistent with other studies.[1] While our hypothesis was rejected with regard to rebound tenderness, pointing, and Rovsing sign, and no previous studies used DS as analgesia. So can analgesia be given safely to patients, with suspected appendicitis prior to surgical evaluation without masking physical signs and symptoms? It was proven that analgesia does not change the outcome of acute appendicitis as published by other researchers, although a few trials have noted some changes in abdominal examination. Generally, if patients are in pain, analgesia is warranted.[15]

There were several limitations to our study. First, we could not use morphine as it was not available, and expensive. Second, there was no previous study that could provide the percentage of using analgesia in acute appendicitis so, we could not determine the sample size accurately. Third, no previous study used DS, so the comparison must be interpreted with caution.

In summary, the administration of analgesia DS does not affect the clinical monitoring, diagnostic accuracy, and outcome of patients with acute appendicitis. Although the use of DS in the preoperative period of acute appendicitis does not mask all the clinical features of the disease, further studies are required to consider it as a safe drug to be used for every patient who has clinical features of acute appendicitis.

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