This group included 10 cases (3 men , 6 women and one a child). The number of cases that judged to have inflamed appendix by laparoscopy were 7, and confirmed by histopathology. Laparoscopy redused the negative appendix rate to zero% in visualized appendices.

Males (n = 3): In two men , the appendix was seen and judged to be acutely inflamed so appendicectomy was performed in both through the laparoscope. In the last one the appendix could not be visualized mostly because of its retroceacal position. That patient developed progressive signs of peritoneal irritation, and 24 hours after laparoscopy, he was operated on and an acutely, non perforated retroceacal appendix was removed and reported as a false negative in the series. Although the diagnostic accuracy of laparoscopy was 100 % for visualized appendices in men, it missed (one) non visualized appendix which was diagnosed clinically.

Females (n = 6): In two out of the six women , the appendix was seen and judged to be acutely inflamed, laparoscopic appendicectomy was done in both . In another two women , the appendix could not be visualized because of overlying adherent omentum, open surgery was performed in both and two acutely inflamed appendices were removed . In the last two cases of women series an ruptured small ovarian cyst was seen through the laparoscope in both. The diagnostic accuracy of laparoscopy in women was 100 % (negative appendix rate of zero%) .

Children(n = one): In this case the appendix was seen and judged to be inflamed, and laparoscopic appendicectomy was done. The diagnostic accuracy of laparoscopy in children was 100 % (negative appendix rate of zero%)

3- *Group C:* Patients with score less than (5). Neither surgery nor laparoscopy was done, but patients put under active observation for 24 hours. They were recovered completely, discharged from the hospital and diagnosed as non specific acute abdominal pain.

Total results of Modified Alvarado Score in 87 patients :

The final diagnosis at the time of discharge of 87 cases who were evaluated by MAS & laparoscopy have been showed in Table (5). There were 70 cases of confirmed appendicitis (28 men, 25 women and 17 children). Fourty nine out of 70 cases were acute non perforated appendicitis (20 men, 18 women and 11 children). Seventeen cases were

acute perforated appendicitis (7 men, 5 women and five children). The other four cases were appendicular masses (one men, 2 women and one child) proved by ultrasonography.

Diagnoses other than acute appendicitis were presented in 17 cases (3 men, 13 women, and one children). In those patients non specific abdominal pain was considered in five cases (3 men, one women and one children), whereas gynecological disorders had reached in 12 women . Moreover, MAS in our study had proved specificity and sensitivity of 80.9%and 84.3%respectively.

By comparing group A (score > 7) with groups B & C (score < 7), in our study, it was clear that the diagnostic accuracy of MAS was statistically better in group A than groups B & C "85%, 62/73" Vs "57 %, 8/14" respectively ($P < 0.05$) . However the use of diagnostic laparoscopy, in group B, reduced the negative appendix rate to zero % .

DISCUSSION

There has been little progress in the diagnosis of acute appendicitis in the past several decades (Lucian *et al.*, 1980) .In recent years various scores have been developed to aid the diagnosis of acute appendicitis. These scoring systems were introduced in order to correct a previous high false positive appendicectomv rates (Ohmann *et al.*, 1995). The modified alvarado score is rapidly gaining wid acceptance in surgical practice. It is simple to use and easy to apply since it relies only on history, clinical examination and a basic laboratory investigation (Kalan *et al.*, 1994).

Our study highlighted the diagnostic accuracy of MAS in acute appendicitis .

As regard to patients with suspected of having acute appendicitis (Score > 7 in 73 cases) our study illustrated that the MAS works extremely well in children and men with diagnostic accuracy of 100% and 96.1 % respectively The negative appendix rate was 0% and 3.9% respectively. However , in women particularly those of child bearing age it falls disappointingly short of expectations and over 30% did not have an inflamed appendix at operation .The diagnostic accuracy was 67.7% .

Our results arc roughly in accordance with the data reported in different series. Owen *et al.* (1992) studied 215 patients with lower right iliac fossa pain over 12 months period and had reached the similar conclusions. However the negative appendix rate in women in our series using the MAS was higher (33%Vs 22%) .Ohmann *et al.* (1995) reported that high MAS (over 7) was sensitive and specific for acute

appendicitis in men and children, however diagnostic laparoscopy is advised in women with questionable appendicitis. Macklin *et al* (1997) updated the results obtained from 119 children with lower right iliac fossa pain (54 boys 65 girls) and found that the diagnostic accuracy of modified Alvarado was 63 % for patients with a score of 7 or more and concluded that current clinical practice which consists of a detailed clinical assessment, active observation, urine testing and selective use of graded compression ultrasonography is more accurate than MAS in the diagnosis of acute appendicitis in children .

Laparoscopy is a safe and useful adjunct in the management of patients with questionable appendicitis. With careful attention to patient selection. laparoscopy has the potential to reduce the negative appendicectomy rate to 1-2% without increasing the risk to the patient. By doing so, it will spare a significant number of patients need for laparotomy (Schrenk *et al*., 1994).

In our study laparoscopy was performed upon 10 patients who have questionable acute appendicitis, where the modified Alvarado score system was (5-6). Two patients were spared operation by laparoscopy (20%). Definitive diagnosis of these two patients was rupture ovarian cysts. That diagnosis was made earlier than would have been possible without diagnostic laparoscopy.Unnecessary operation was thus, avoided in 2.3 % (2/87) patients. The negative appendix rate of the laparoscopic group was zero %, as there was no false positive case. All patients undergoing laparoscopy had also, undergone a period of observation, during which the symptoms showed neither signs of improvement nor deterioration. One patient in whom the diagnosis of appendicitis was missed at laparoscopy. however appendicectomy was done because of persistent signs and symptoms under subsequent observation.

Our results showed similar observation in other studies. Lucian *et al*. (1980) found that 12 out of 32 patients, undergoing laparoscopy were spared operation (38%) and unnecessary operation was thus avoided in 10 % (12/119) of the entire group. There was one false positive case (perforated peptic ulcer) and two false negative cases (incompletely visualized, and leukaemia). Paterson and Thompson , (1990)concluded that the improvement in diagnostic accuracy may be offset by an increased number of negative appendectomies resulting from non visualized and false positive inflammation .

Patient who had score less than (5) neither surgery nor laparoscopy was done. They were recovered completely, discharged

from the hospital and diagnosed as non specific acute abdominal pain. However, as they were not subsequently required an appendicectomy for their possible appendicitis, conclusions on false negatives have to be circumspect .

CONCLUSIONS

The Modified Alvarado Score is an easy and satisfactory aid to early diagnosis of appendicitis in children and men but diagnostic laparoscopy should be considered in women particularly in child bearing age and in patients with questionable appendicitis (score < 7) .

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الملخص العربى

الدقة التشخيصية لمقياس الفرادو المعدل فى التهاب الزائدة الدودية الحاد

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أجريت هذه الدراسة المستقبلية عن مائة واثنين وعشرين مريضا (٤٣ ذكر ، ٥٣ أنثى ، ٢٦ طفل) يعانون من آلام حادة بالجزء الأيمن من أسفل البطن فى الفترة من يوليو ١٩٩٨ ميلاديا حتى أبريل ١٩٩٩ ميلاديا بمستشفى سوهاج الجامعى ، تتراوح أعمارهم من ٣ – ٦٤ سنة.

خمسة وثلاثون مريضا من هؤلاء المرضى تم تشخيصهم بأنهم يعانون من أمراض أخرى غير الالتهاب الحاد للزائدة الدودية وذلك بالملاحظة الإكلينيكية الدقيقة وإجراء فحص بالموجات الصوتية على البطن وبالفحوص المعملية. ولذلك لم يتم تقييمهم بواسطة مقياس الفرادو المعدل الذى يعتمد على وجود ٣ أعراض مرضية (القىء وفقدان الشهية والآلام الحادة بالجزء الأيمن من أسفل البطن) ثلاثة شواهد إكلينيكية (رقة بالبطن والرقة المرتجعة مع الحركة وإرتفاع درجة الحرارة) وفحص معملى واحد (زيادة عدد كرات الدم البيضاء) ، أما فى باقى المرضى وعددهم ٨٧ مريضا تم تطبيق مقياس الفرادو المعدل لهم وتم تقسيمهم إلى ثلاث مجموعات أ ، ب ، جـ :

المجموعة أ:

شملت ٧٣ مريض (٢٦ ذكرا و ٣١ أنثى و ١٦ طفل).

سجل هؤلاء المرضى ٧ درجات أو أكثر بمقياس الفرادو المعدل وقد أجرى لهم عملية استئصال للزائدة الدودية فور دخولهم المستشفى.

المجموعة ب:

سجل هؤلاء المرضى وعددهم عشرة من ٥ إلى ٦ درجات بمقياس الفرادو المعدل وقد أجرى لهم منظار البطن التشخيصى ، بلغت الدقة التشخيصية لمنظار البطن ١٠٠% فى الحالات التى شوهدت فيها الزائدة الدودية ملتهبة بواسطته.

المجموعة جـ:

سجل هؤلاء المرضى أقل من خمسة درجات بمقياس الفرادو المعدل ، تم وضعهم تحت الملاحظة وقد زالت آلامهم تماما وتم خروجهم من المستشفى بدون إجراء عمليات جراحية أو منظار البطن التشخيصى.

الاستنتاج:

يعتبر مقياس الفرادو المعدل طريقة بسيطة وسهلة للتشخيص المبكر لالتهاب الزائدة الدودية الحاد فى الأطفال والرجال الذين سجلوا أكثر من أو يساوى ٧ درجات وأن منظار البطن التشخيصى لابد أن يؤخذ فى الاعتبار لاعطاء الدقة التشخيصية اللازمة بالنسبة للسيدات بصفة عامة والمرضى الذين يسجلون أقل من ٧ درجات.

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