EXECUTIVE SUMMARY

Background and objectives

The classical signs and symptoms of acute appendicitis were first reported by Reginald Haber Fitz (America) in 1886. Since then it has remained the most common diagnosis for hospital admission requiring laparotomies. The diagnosis of appendicitis can be difficult and may require help of laboratory investigations and imaging.

A negative appendectomy is taken as a surgery performed for a preoperative diagnosis of appendicitis, results in a normal histopathology specimen. Different techniques have been devised to assist in equivocal cases in attempts to decrease negative appendectomy rates. A number of scoring systems have been used for aiding in early diagnosis of acute appendicitis and its prompt management. Of the many scoring systems currently available, the modified Alvarado scoring system is the most widely employed, because of its convenience, better accuracy. Unfortunately this system is more accurate in western population. Several studies depict its low accuracy in Indian subcontinent. Although typical uncomplicated cases of acute appendicitis are easy to diagnose and manageable but in atypical clinical presentation of it is a hard challenge to even experience surgeon. In spite of the advances in the diagnostic and imaging techniques, the rates of the negative findings on appendicectomy specimen have not decreased much. Clinical judgment is still the most important factor in the management of patients with suspected acute appendicitis. The routine use of CT scan or diagnostic laparoscopy for all patients who are suspected to have acute appendicitis is neither cost-effective nor safe. However, the use of these two diagnostic procedures in selected controversial cases can enhance the accuracy of diagnosis, reduce the cost and reduce NAR.

This clearly indicates the need of development of new diagnostic scoring system which is easy to apply have high sensitivity and specificity to reduce negative appendicectomy rate. In the present study we have developed new diagnostic scoring system. Efficacy of this scoring system is compared with already trusted modified Alvarado scoring system.

The Yash score is a new diagnostic scoring system developed for the diagnosis of acute appendicitis and has been shown to have significantly higher sensitivity, specificity and diagnostic accuracy compared to MASS(modified Alvarado scoring system)Although Yash score is more extensive than MASS, the latter did not include CRP, USG and one sign hyperesthesia in Sherren’s triangle. This is done to improve diagnostic accuracy of MASS.
Patients attending AVBRH hospital with right iliac fossa pain during the period January 2012 to Jan. 2017 were included in the study.

Elements of the disease history, clinical findings and results of laboratory tests are weak individual discriminators of appendicitis. However, in combination, they provide high discriminatory power. USG provides a highly accurate, specific, and sensitive test (a sensitivity rate of 86.2%, a specificity rate of 90.9 %,) for clinically equivocal acute appendicitis. Hence obviously combinations of all these parameters give high strength to the new diagnostic scoring system Yash score.

Methods

A prospective comparison YSS & MASS was done on 418 patients, who presented with right iliac fossa pain to the hospital during the period 1 January 2012 to Jan. 2017. A score of 7 were optimal cut off threshold for YSS and MASS. Depending on clinical judgment appendicectomy was done. Sensitivity, specificity, Positive predictive value (PPV), negative predictive value (NPV) and diagnostic accuracy for YSS & MASS were calculated using SPSS 17.0 statistical software. Chi square test was applied to compare the YSS and MASS in diagnosing acute appendicitis. A p value < 0.0001 is considered significant. Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) at the optimal cut-off threshold scores were derived from the ROCs for both the YSS and MASS. Both scores were compared using Chi-square test for statistical analysis. Comparison in between Yash score and MASS in the present study shows significant statistical difference ($\chi^2$-value =30.51)

Overall our study suggests that Yash score, a broadened diagnostic kit is a much better diagnostic tool.

Results

The sensitivity and specificity of Yash score was found to be 99.48 percent and 92.86 percent respectively. The sensitivity and specify of MASS was 52.05 percent and 100 percent respectively. The positive predictive value and negative predictive value of Yash score was 99.48 percent and 92.86 percent respectively. Negative and positive predictive values of MASS were 13.02% and 100% respectively.

Discussion

Around 418 subjects were included in the study, consists of 251(60.05) of males and 167(39.95) from female gender, clinically diagnosed as acute appendicitis subjected for thorough clinical examination, laboratory investigations ,USG and finally subjected
appendiceal specimen for histopathological examination after surgery. All patient operated by open appendicectomy method.

Sherren’s triangle hyperesthesia is a first parameter included in the new score. We offered score of 1 in Yash scoring system as per its probability, diagnostic accuracy and odds ratio. In the present study migratory right iliac fossa pain was selected as a second parameter for Yash scoring system. Given score one as per its MASS.

Presence of anorexia increases probability of appendicitis but its absence cannot rule out diagnosis of acute appendicitis as specificity and NPV are less. We had given score of 1 to anorexia to broaden the diagnostic kit (YSS).

For the parameters, fever and nausea/vomiting, a score of 1 each given in Yash scoring system.

Rebound tenderness represents pain from layer of peritoneum by stretching or moving. We offer a score of 1 to this valuable sign in Yash scoring system.

For Leucocytosis and tenderness in right iliac fossa, we offer score of 2 as per MASS. Due to high accuracy, odds ratio and probability of USG, C-reactive protein in a present study, score of 4 and 3 were given respectively.

Receiver operating curves (ROCs) at the optimal cut-off threshold score of 7 for the YASH score and modified Alvarado score were derived using SPASS 17.0 statistical software. Comparison in between Yash score and MASS in the present study shows significant statistical difference.

We found in a present study 28 (6.69%) patients were not having acute appendicitis on histopathological examination.

**Conclusion**

From the above result and discussion, it can be concluded that YASH scoring system is more convenient, accurate and specific scoring system than MASS.