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Original Research Paper

General Surgery

COMPARATIVE STUDY OF RIPASA SCORE VS RADIOLOGICAL INVESTIGATIONS ON DIAGNOSIS OF ACUTE APPENDICITIS

Dr. Sri Hari	M.S ,Associate Professor,department Of Generalsurgery,kapv Govt.medical College,trichy.
Dr. D. Sivakumar*	M.S,Assistant Professor ,Department Of Genera Surgery,kapv Govt.medical College,trichy. *Corresponding Author
Dr. R. Veesar Vignesh	Postgraduate, Department Of General Surgery,kapv Govt. Medical College, Trichy.
Dr. B. Tharini	Postgraduate, Department Of General Surgery,kapv Govt. Medical College, Trichy

ABSTRACT

INTRODUCTION: Acute appendicitis is defined as inflammation of vermiform appendix and is one of the commonest cause of abdominal pain seen in emergencies.The present study was planned to compare RIPASA scoring system, which is based on purely clinical and laboratory findings vs radiological investigations such us ultrasound (USG) abdomen and pelvis, and contrast enhanced computer tomography (CECT) keeping in mind to effectively reduce the negative appendicectomy rate.

MATERIALS AND METHODS: All patients admitted in General surgery department undergoing open appendicectomy, MGM Government hospital,trichy for a period of 2 year . RIPASA score, USG abdomen and pelvis and Contrast enhanced Computer topography are done to all patients undergoing Emergency open appendectomy under regional or general anaesthesia.

RESULTS: P value on comparing RIPASA vs USG abdomen shows a statistical significance RIPASA score. P value on comparing RIPASA vs CECT abdomen shows no statistical significance.

CONCLUSION: The current study suggests that CECT is the optimum diagnostic tool for Acute Appendicitis compared with RIPASA and USG abdomen.

KEYWORDS : Appendicitis,RIPASA SCORE, Appendectomy.

INTRODUCTION

Acute appendicitis is defined as inflammation of vermiform appendix and is one of the commonest cause of abdominal pain seen in emergencies, and being the most common surgical emergencies encountered in the world particularly among the young adults and children. No single sign, symptom or diagnostic test confirms the diagnosis of acute appendicitis accurately in every cases. Although acute appendicitis has typical clinical presentation in 70% of the cases, about 30% of the patients have an uncertain pre-operative diagnosis due to which there is negative laparotomy in as high as 20-25% cases. The rate of such negative laparotomy is even higher (35- 45%) in females of childbearing age, because of the pelvic organs and complications of pregnancy in this group. Various diagnostic modalities are different scoring systems, and ultrasono graphy, Contrast studies, computed tomography (CT) and MRI. Out of which Only contrast enhanced computerized tomography (CECT) of abdomen can diagnose the condition with very high sensitivity and specificity but it is not feasible to have this investigation done for each patient suspected to have appendicitis, particularly in countries with limited resources

In 2010, a new scoring system was proposed by the Department of General Surgery at the Raja IsteriPengiranAnakSaleha (RIPAS) Hospital, Brunei Darussalem, which comprise 14 parameters for clinical diagnosis of acute appendicitis for asian population. The scoring system showed a sensitivity and a specificity of 97.5% and 81.8%. respectively.

The present study was therefore planned to correlate RIPASA scoring system, which is based on purely clinical and laboratory findings and radiological investigations such us ultrasound (USG) abdomen and pelvis, and contrast enhanced computer tomography (CECT) keeping in mind to effectively reduce the negative appendicectomy rate.

MATERIALS AND METHODS

All patients admitted in General surgery department undergoing open appendicectomy, MGM Government hospital,trichy for a period of 2 year . RIPASA score, USG abdomen and pelvis and Contrast enhanced Computer topography are done to all patients undergoing Emergency open appendectomy under regional or general anaesthesia.

RIPASA SCORE

Table no 1:SCORING PARAMETERS OF RIPASA SCORE

SOCRING PARAMETERS	SCORE
MALE	1
FEMALE	0.5
AGE < 39	1
AGE > 40	0.5
RIF PAIN	0.5
MIGRATORY PAIN	0.5
ANOREXIA	1
NAUSEA AND VOMITING	1
DURATION OF SYMPTOMS < 48 HRS	1
DURATION OF SYMPTOMS > 48 HRS	0.5
RIF TENDERNESS	1
RIF GUARDING	2
REBOUND TENDERNESS	1
ROVSING SIGN	2
FEVER	1
RAISED WBC	1
NEGATIVE URIN ALANYSIS	1
FOREIGN NRIC	1
TOTAL	17.5
< 5.0	PROBABILITY OF ACUTE APPENDICITIS IS UNLIKELY
5.0 - 7.0	LOW PROBABILITY OF ACUTE APPENDICITIS

7.5 - 11.5	PROBABILITY OF ACUTE APPENDICITIS IS HIGH
> 12	DEFINITE ACUTE APPENDICITIS

OBSERVATION AND RESULTS

In the study 200 patients who underwent open appendectomy in Mahatma Gandhi Memorial government hospital, Trichy, patients were assessed with RIPASA score, and USG abdomen and pelvis, and CECT abdomen and finally compared with postoperative Histopathology reports

ANALYSIS OF RIPASA SCORE VS HPE REPORT :

Table No-2: Analysis Of Ripasa Score Vs Hpe Report

		HPE REPORT		Total	P value
		Yes	No		
RIPASA SCORE	>7.5	175	4	179	0.180
	<7.5	10	11	21	
Total		185	15	200	
Sensitivity	**Specificity**	**PPV**	**NPV**	**Accuracy**	
94.59%	**73.33%**	**97.77%**	**52.38%**	**93.00%**	

Among 200 patients studies, 179 (89.5%) patients has a RIPASA score > 7.5, and 21 (10.5 %) patients had a score < 7.5.When applied RIPASA score for the patients who underwent open appendectomy, the sensitivity, specificity, positive predictive value and negative predictive value, accuracy were, 94.59%, 73.33 %, 97.77%, 52.38% and 93% respectively.

ANALYSIS OF USG ABDOMEN VS HPE REPORT :

Table No-3: Analysis Of Usg Abdomen Vs Hpe Report

		HPE REPORT		Total	P value
		Yes	No		
USG	Yes	140	8	148	<0.0001
	No	45	7	52	
Total		185	15	200	
Sensitivity	**Specificity**	**PPV**	**NPV**	**Accuracy**	
75.68%	**46.67%**	**94.59%**	**13.46%**	**73.50%**	

Among 200 patients studied, 148 (74%) patients were positive for acute appendicitis and about 52 (26%) patients were negative for acute appendicitis on use abdomen and pelvis. Sensitivity, specificity, positive predictive value and negative predictive value and accuracy for USG abdomen and pelvis for diagnosis of acute appendicitis is, 75.68%, 46.67%, 94.59%, 13.46% and 73.50% respectively.

Analysis Of Cect Abdomen Vs Hpe Report :

Table No-4: Analysis Of Cect Abdomen Vs Hpe Report

		HPE REPORT		Total	P value
		Yes	No		
CECT	Yes	180	2	182	0.453
	No	5	13	18	
Total	185	15	200		
Sensitivity	**Specificity**	**PPV**	**NPV**	**Accuracy**	
97.30%	**86.67%**	**98.90%**	**72.22%**	**96.50%**	

Among 200 patients studies, 182 (91%) patients were diagnosed with acute appendicitis by CECT abdomen and 18 (9%) patients were ruled out appendicitis by CECT.Sensitivity, specificity, positive predictive value and negative predictive value and accuracy for CECT abdomen and pelvis for diagnosis of acute appendicitis is, 97.30%, 86.67%, 98.90%, 72.22% and 96.50% respectively.

Ripasa Vs Usg Abdomen :

Table No-5: Ripasa Vs Usg Abdomen

			USG		Total	P value
			Yes	No		
RIPASA SCORE	>7.5	Count	138	41	179	<0.0001
		% within RIPASA SCORE	77.1%	22.9%	100.0%	
	<7.5	Count	10	11	21	
		% within RIPASA SCORE	47.6%	52.4%	100.0%	
Total		Count	148	52	200	
		% within RIPASA SCORE	74.0%	26.0%	100.0%	

For all cases, RIPASA score and USG abdomen results were derived and calculated, and these results were compared in terms of sensitivity, specificity, NPV, PPV and accuracy. The following were the results

Ripasa Score Vs Cect Abdomen :

Table No-6: Ripasa Score Vs Cect Abdomen

			CECT		Total	P value
			Yes	No		
RIPASA SCORE	>7.5	Count	175	4	179	0.549
		% within RIPASA SCORE	97.8%	2.2%	100.0%	
	<7.5	Count	7	14	21	
		% within RIPASA SCORE	33.3%	66.7%	100.0%	
Total		Count	182	18	200	
		% within RIPASA SCORE	91.0%	9.0%	100.0%	

For all cases, RIPASA score and CECT abdomen results were derived and calculated, and these results were compared in terms of sensitivity, specificity, NPV, PPV and accuracy. The following were the results Out of 200 patients studied, sensitivity, specificity and accuracy for diagnosing Acute Appendicitis were **94.59%, 73.33% and 93% respectively, for RIPASA score** and **97.30%, 86.67% and 96.50% respectively, for CECT Abdomen, With p value - 0.453.**

DISCUSSION :

In the current study of adults, with abdominal pain, who underwent open appendicectomy, with cutoff values of 7.5 for RIPASA score, and USG abdomen criteria yielded sensitivity, specificity, and accuracy of 94.59%, 73.33% and 93% (RIPASA) and 75.68%, 46.67% and 73.50% (USG abdomen), respectively, for diagnosing Acute Appendicitis.

The RIPASA score had a significantly higher diagnostic accuracy compared with USG Abdomen in the current study for diagnosing Acute Appendicitis. The RIPASA score contains parameters such as age and sex, which could increase the accuracy, and the RIPASA score also contains more parameters that could aid with the differential diagnosis of acute appendicitis.

All 14 parameters of the RIPASA score are easily obtained from good clinical histories, examinations and investigations, and RIPASA score is easy to implement without additional costs compared with USG abdomen, therefore the RIPASA score may be more appropriate for the diagnosis of acute appendicitis.

Computed tomography is thought to be important in the diagnosis and differential diagnosis of Acute Appendicitis, however, no studies to date directly compare the RIPASA score with CT in the diagnosis of acute appendicitis.

In the current study, the sensitivity, specificity and accuracy of CECT were significantly higher than those of the RIPASA score for diagnosing Acute Appendicitis. There were statistically significant differences in diagnostic accuracy, sensitivity and specificity between MSCT and RIPASA score, indicating that MSCT is an important supplement to RIPASA score.

This may be because the RIPASA score lacks highly specific parameters, and in many other diseases (including inflammation of the caecum and/or ascending colon, gastrointestinal perforation, and right ureter calculus), a few abnormal parameters that are included in the RIPASA score often develop.

RESULTS :

The current study suggests that CECT is the optimum diagnostic tool for Acute Appendicitis with sensitivity, specificity and accuracy of 97.30%, 86.67% and 96.50% respectively, followed by RIPASA with sensitivity, specificity and accuracy of94.59%, 73.33% and 93% respectively. USG Abdomen has sensitivity, specificity and accuracy75.68%, 46.67% and 73.50% respectively, showing the effectiveness of RIPASA score and CECT over USG abdomen in diagnosing acute appendicitis.

P value on comparing RIPASA vs USG abdomen shows a statistical significance of < 0.0001, showing effectiveness of RIPASA score.

P value on comparing RIPASA vs CECT abdomen shows no statistical significance, i.e P value – 0.549, and showing effectivenss of CECT over RIPASA socre.

CONCLUSION :

In conclusion, the current study suggests that CECT is the optimum diagnostic tool for Acute Appendicitis compared with RIPASA and USG abdomen.

The study also showed that the RIPASA, an easy and a bedside scoring system, may be a superior diagnostic scoring system compared with the USG abdomen for Acute Appendicitis, which is important in hospitals where CECT scans or 24*7 Reporting radiologist are not readily available.

REFERENCES :

1. Cuscheri A. The small intestine and vermiform appendix. In: Cuschieri A, Giles GR, Mossa AR, eds. Essential Surgical Practice, 3rd ed. Oxford: Butterworth Heinermann, 1995:1297-1329.
2. Stephens PL, Mazzucco JJ. Comparison of ultrasound and the Alvarado score for the diagnosis of acute appendicitis. Connecticut Med. 1999 Mar;63(3):137-40.
3. Kalan M, Talbot D, Cunliffe WJ, Rich AJ. Evaluation of the modified Alvarado score in the diagnosis of acute appendicitis: a prospective study. Ann Roy Coll Surg Eng. 1994 Nov;76(6):418.
4. Chong CF, Adi MI, Thien A, Suyoi A, Mackie AJ, Tin AS, et al. Development of the RIPASA score: a new appendicitis scoring system for the diagnosis of 9. acute appendicitis. Singapore Med J. 2010 Mar 1;51(3):220.
5. Fitz RH. Perforating inflatmmation of the vermiform appendix; with special Reference to its early diagnosis and treatment. Am J Med Sci. 1886;92:321-46.
6. McBurney CH. IV. The incision made in the abdominal wall in cases of appendicitis, with a description of a new method of operating. Ann Surg. 1894 Jul;20(1):38.
7. Ochsner AJ. A Handbook of Appendicitis, 2nd ed, Chicago: GP Engelhard & Company;1906. Iqbal J, Khan MH, UlMukim R, Nisar A, Iqbal M. Alvarado score in the diagnosis of acute appendicitis. 2009;25(3);180-4.
8. Bhabatosh D, Singh G, SambhajiKh, Lekshmipriya L, Singh RL, Sharma LK. Comparison between RIPASA and Alvarado score in the Diagnosis of Acute Appendicites. Int J Curr Res. 2016(8);1:25538-546.
9. Addiss DG, Shaffer N, Fowler BS, Tauxe RV. The epidemiology of appendicitis and appendicectomy in United States. Am J Epidemiology; 132: 910-25.
10. Flum DR, Koepsell T. The clinical and economic correlates of misdiagnosed appendicitis: Nationwide analysis Arch Surg 2002; 137(7): 799-804.
11. Mardan MAA, Mufti TS, Khattak IU, Chikunda N, Alshayeb AA, Mohammad AM et al. Role of Ultrasound in acute appendicitis. J Ayub Med Coll 2007; 19(3): 72-9.
12. Chong CF, Adil MIW, Thien A, Suyoi A, Mackie AJA, Tin AS et al. Development of the RIPASA score: A new appendicitis scoring system for the diagnosis of acute appendicitis. Singapore Med J 2010; 51: 220-5.