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ACCURACY OF ALVARDO SCORE IN ACUTE APPENDICITIS AMONG ADULTS AT TIRUNELVELI MEDICAL COLLEGE HOSPITAL, TIRUNELVELI,TAMILNADU,INDIA

General Surgery

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ABSTRACT

Acute appendicitis is the most common cause of an acute abdomen requiring surgery with a life time risk of 7%.Symptoms of acute appendicitis overlap with other conditions making it a challenge to diagnose it in the early stages. Clinical prediction rules(CPR) has got a diagnostic potential in finding the key signs and symptoms of the condition.CPR has also got the potential to reduce diagnostic errors.CPR is the need of the hour in poor resource settings to avoid unwanted emergency surgeries and to prevent missing the complications.In 1986 Alvarado constructed a 10 point clinical scoring system called the Alvarado scoring system.Its acronym is MANTRELS.Its for diagnosing acute appendicitis with the symptoms and signs. Alvarado score enables risk stratification in patients presenting with abdominal pain linking the probability of appendicitis to recommendations regarding discharge,observation or surgical interventions.However imaging with Computerised Tomography scan(CT Scan) is a better way to diagnose the condition. But keeping in mind the time lag, exposure to radiation, cost and variable availability of the imaging modality means that the Alvarado scoring may be valuable diagnostic diagnostic aid when suspecting acute appendicitis as a cause for acute abdomen particularly in low resource countries where imaging is not an option

KEYWORDS

Appendicitis, Alvarado, Mantrels, Scoring

INTRODUCTION:

Aim and Objective:

- To determine the sensitivity and specificity of Alvarado scoring in diagnosing acute appendicitis
- To determine the positive and negative predictive value of Alvarado scoring in diagnosing acute appendicitis

Study Plan:

1.Design-Analytical study-Cross sectional study
2.Area-Tirunelveli Medical college hospital(TVMCH)
3.Duration-2 years
4.Population Size- patients taken for surgery in TVMCH
5.Sample Population-patients taken for surgery for acute appendicitis
6.Population Size-500 patients
7.Selection Criteria;

Inclusion Criteria;

500 consecutive patients who presented with pain in the right iliac fossa suggestive of appendicitis

Exclusion criteria;

- Patients who have undergone previous surgeries
- Patients who have been treated with ochsner-sherren regimen for appendicitis previously
- Paediatric age group
- Patients not giving consent

Tool;

A structured observation guide consisting of a proforma featuring the Alvarado scoring system

Materials and Methods;

The study subjects were taken from the surgery ward, patients admitted with acute abdomen suggestive of acute appendicitis

History was taken and the study was proceeded. After completion of the surgery the specimens were sent for Histopathological examination.

The diagnosis was made based on the HPE reports

Results

Out of the 500 patients studied

Number of patients with acute appendicitis is 470(confirmed by HPE)
Number of patients without acute appendicitis is 30

Number of patients with acute appendicitis with Alvardo score > or = 7 is 310

Number of patients with acute appendicitis with Alvarado score < 7 is 160

Number of patients without acute appendicitis with Alvarado score > or = 7 is 0

Number of patients without acute appendicitis with Alvarado score < 7 is 30

Number of patients with acute appendicular abscess is 20(all are Alvarado score >7)

Number of patients with perforation of appendix is 75
Out of the 75, number of patients with Alvarado score > or =7 is 60,number of patients with Alvarado score < 7 is 15

In order to find the sensitivity, specificity, positive predictive value, and negative predictive value of the Alvarado score a cross sectional study is done using the structural observation guide as a tool, in the Tirunelveli Medical College Hospital(TVMCH) area.

ALVARADO SCORE

Total score. 10.

Alvarado score	Positive by HPE	Negative by HPE
> Or = 7	310	0
< 7	160	30

Sensitivity = 65.9%
Specificity = 100%
Positive predictive value = 100%

Negative predictive value = 15.7%
Analysis Based on Age and Sex

Age in years	True Positive (n=310)		False Negative (n=160)		True Negative (n=30)		Total
	M	F	M	F	M	F	
13-20	100	75	5	80	5	10	275
20-30	40	35	-	30	5	5	115
30-40	15	40	-	40	5	-	100
>40	-	5	-	5	-	-	10
	155	155	5	155	15	15	

Feature	Score
Migration of pain	1
Anorexia	1
Nausea	1
Tenderness in right lower abdomen	2
Rebound pain	1
Elevated Temperature	1
Leucocytosis	2
Shift of white blood cell count to left	1

Discussion:

As we have seen from the results of the study shown above the Alvarado score has a pivotal role in the triage of the patients with acute abdomen suggesting acute appendicitis.

Sensitivity = 65.9%
Specificity = 100%
Positive predictive value =100%
Negative predictive value =15.7%

The score value of more than or equal to 7 indicates a severe condition requiring immediate interventions, on the other hand values of less than 7 can be less severe and can be admitted in the ward and a wait and watch strategy can be implemented.

Age and sex analysis shows that the Alvarado score has the most false negatives in females in the age group of 20-40 years.Therefore this group requires further radiological evaluation by using ultrasound abdomen or contrast enhanced CT scan(CECT) to characterize the right iliac fossa pain accurately.

CONCLUSION

It is seen that the Alvarado score has the most false negatives in females in the age group of 20-40 years.

This may be due to the various other conditions that mimics the features of appendicitis. Therefore this age group requires further radiological evaluation by using ultrasound abdomen or contrast enhanced CT scan(CECT) to characterize the right iliac fossa pain accurately. Hence the use of radiological investigations in females in the age group of 20-40 years can increase the sensitivity of the score. As it is found that the Alvarado score is highly sensitive and specific in males of all age groups, further radiological investigations in the sub group of patients (females of 20-40 years) will increase the sensitivity and specificity of this score in all age groups.

At the end of analytical study it's proved that the Alvarado score is a crucial deciding factor in categorizing the patients into various risk categories. After the implementation of the Alvarado scoring system a lot of unwanted surgeries has been avoided and the incidence of missing any gross and significant complication has been reduced. The use of the Alvarado scoring system has had great success in resource poor settings such as in developing and underdeveloped countries. Resource poor settings where high end imaging modalities is a far cry, the Alvarado score can be the best indicator of the severity. The Alvarado score is of importance especially to inexperienced surgeons to pick up the severe form of the disease which can't be picked up in early stages since it will be similar to many other differential diagnosis of acute abdomen. Hence it is proved beyond doubt that the Alvarado scoring system is available tool in diagnosing acute appendicitis in patients with acute abdomen with high accuracy especially in males

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