



ISSN NO. 2320-5407

Journal homepage: <http://www.journalijar.com>

INTERNATIONAL JOURNAL
OF ADVANCED RESEARCH

RESEARCH ARTICLE

Evaluation of Alverado score in diagnosis of acute appendicitis in relation with HPE

Dr.P.Venkateshwar¹ and Dr.J.Janardhan²

1. Associate Professor of surgery, Osmania Medical College Hyderabad, Telangana

2. Assistant Professor of surgery, Osmania Medical College Hyderabad, Telangana

Manuscript Info

Manuscript History:

Received: 18 August 2015
Final Accepted: 25 September 2015
Published Online: October 2015

Key words:

Acute appendicitis Alvarodo
scale, Appendectomy

*Corresponding Author

Dr.P.Venkateshwar

Abstract

Acute appendicitis is the most common cause of acute surgical abdomen. Appendectomy is the most commonly done emergency surgery. Acute appendicitis poses a clinical challenge especially in developing countries where advanced radiological investigations do not appear cost effective and so clinical parameters remain the main stay of diagnosis. This is a clinical study to correlate the Alvarado score in diagnosing preoperatively acute appendicitis with post operative histopathological reports. Alvarado score improves diagnostic accuracy and consequently reduce negative exploration. Alvarado score is practical, reliable and easy score. It can be helpful in safe and accurate decision making in patient with appendicitis. The results showed that Alvarado score is more sensitive in diagnosing acute appendicitis in comparing with histopathology.

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INTRODUCTION

The vermiform appendix is considered by most to be a vestigial Organ; its importance in surgery results only from its propensity for inflammation, which results in the clinical syndrome known as acute appendicitis. Not with standing advances in modern radiographic imaging and diagnostic laboratory investigations, the diagnosis of appendicitis remains essentially clinical, requiring a mixture of observation, clinical acumen and surgical science P.Ronan O et al (2013). The overall lifetime risk of developing appendicitis is estimated to be of 7% with the highest frequency occurring at ages from 10 to 30 years Mohamed AA et al (2010). Its incidence is 1.5--1.9/1000 in male and female population Cushieri.A et al (1995). Surgery for acute appendicitis is the most frequent operation performed. 10% of all emergency abdominal operations Pal KM, Khan (1998), Kumar V et al (1992). Routine history and physical examination still remain most practical diagnostic modalities, Peterson M C Holbrook et al (1992). Absolute diagnosis is possible at operation and histopathological examination of specimen Dado G. et al (2000). It is impractical to have a definitive preoperative diagnosis by gold standard, histopathology, which leads to an appreciable rate of negative appendicectomy as reported in the world literature varying from 20–40% with its associated morbidity of around 10%, some surgeons even accept a negative appendicectomy rate of 20%. Kalan et al (1994). In order to reduce the negative appendicectomy rates various scoring systems have been developed for supporting the diagnosis of acute appendicitis Ohmann et al (1999). Alvarado scoring system is one of them and is purely based on history, clinical examination and few laboratory tests and is very easy to apply Alvarado A (1986). Decision making in cases of acute appendicitis poses a clinical challenge especially in developing countries where advanced radiological investigations do not appear cost effective and so clinical parameters remain the mainstay of diagnosis Chan M.Y et al (2001). It has been claimed that diagnostic aids can drastically reduce the number of appendicectomies in patients without appendicitis, the number of perforation and the time spent in hospital Carrie E Black et al (2000). These aids include laparoscopy scoring system, Ultra sonography, CT Computed tomography scans, MRI (Magnetic Resonance Imaging), which are available in different settings and have different advantages and disadvantages. However, routine history and clinical examination both remain the most effective and practical diagnostic modalities Dehizbashi A et al (2003).

Material and Methods

Source and period of study

Patients who present with symptoms and signs of acute appendicitis. Under went an emergency Appendicectomy at Osmania general hospital Hyderabad, during the period of October 2013 to June 2015.

Ethical Consideration

The cases were taken up for study on admission after obtaining written consent and after explaining them the nature of operation, type of anaesthesia and the study being done. There was no recruitment of any volunteers, additional nursing or bio medical staff for this study; also there was no interference in the normal duty pattern of the hospital staff. During this study no remuneration in the form of cash was given to the study subjects or any staff involved. This study was not funded or help taken from drug companies in form of cash or drugs supplied from them.

Inclusion Criteria

1. It includes the patients who presented with symptoms and signs of acute appendicitis.
2. Both male and female patients.

Exclusion Criteria

1. Age below 10 yr both female and male
2. Diabetes mellitus,
3. Immunocompromised patients
4. Pregnant patients.
5. Appendicular mass.

Method of Collecting Data

100 cases underwent appendicectomy operation. Patients presenting to the Out Patient department or emergency department of Osmania general hospital, Hyderabad, with symptoms and signs suggestive of acute appendicitis between October 2013 to June 2015. All included patients were admitted and are initially subjected for detailed history taking, clinical examination and investigations. Following which they were evaluated using the Alvarado scoring. Then the total score is calculated for each patient and based on the results patients are divided into two groups.

Table. 1. ALVARADO (MANTRELS) SCORING SYSTEM

Symptom	Score
1.Migratory Right iliac fossa RIF Pain	1
2.Anorexia	1
3.Nausea & Vomiting	1
SIGN	
1.Tenderness Over RIF	2
2.Rebound Tenderness RIF	1
3.Elevated Temperature	1
LAB FINDINGS	
1.Leucocytosis	2
2.Shift To Left	1
TOTAL	10

The Alvarado score is dynamic and patients score can increase or decrease .On reassessment those patients with score 7-10 underwent Appendicectomy. Those patients with scores of less than 7 not considered for surgery

unless there were compelling reasons. If after 24 hr observation, regardless of score, who were thought on clinical grounds to require Appendectomy, it was performed. Patient less than 14 yrs of age taken into the group of children. Pain around the umbilicus or pain upper abdomen later shifted to right lower quadrant was taken as migratory RIF pain. The laboratory finding of leucocytosis is defined as a white cell count in excess of $10 \times 10^9/\text{lit}$ ($10,000/\text{mm}^3$). Elevated temperature is taken as a temperature of more than 100 F. Diagnosis of acute appendicitis is confirmed by operative findings and histopathological assessment of the Appendectomy specimen one of more of following is observed. Neutrophilic infiltration of all the coats of appendix. Necrosis of mucosa leading to mucosal ulcers. Perforated of appendix. Final data was collected in a specially designed proforma filled in for each patient. Finally the reliability of Alvarado scoring system is assessed by calculating. Negative Appendectomy rate (the proportion of operated patients having normal appendix removed) and Positive predictive value (the proportion of patients with a positive test result who actually have the disease) was assessed.

Result and Discussion

Our study age of patient ranged from 11 yrs to 58 yrs with majority of them in second decade and followed by third decade. Out of 100 patients male 32 (64%), female 18 (36%), male: female ratio 1.7:1. All specimen of 100 patients were sent for histopathology. 46 patients were in second decade followed by 19 patients in third decade. Acute inflammation was present in 50 cases, 8 had perforation and 6 had gangrenous appendix. Rest of 36 cases were ovarian cyst, salpingitis mesenteric adenopathy.

TABLE 2..SENSITIVITY OF MODIFIED ALVARADO SCORE LESS THAN 7 GROUP A

Sex	No of patient score less than 7	Acute appendicitis	Normal appendix	Sensitivity
Male	30	12	18	40%
Female	8	02	06	25%
Total	38	14	24	36%

TABLE 3.SENSITIVITY OF MODIFIED ALVARADO SCORE 7 AND ABOVE GROUP B

Sex	No of patients score above 7	Acute appendicitis	Normal appendix	Sensitivity
Male	34	32	2	94.11%
Female	28	24	4	85.71%
Total	62	56	6	90.32%

DISCUSSION

The aim and objective of this study was to evaluate the sensitivity of Alvarado scoring system in the diagnosis of acute appendicitis, to reduce the rate of negative appendectomy and to reduce the direct complications of acute appendicitis due to misdiagnosis and delay in surgery. The main aim of clinical decision making process is to reach an accurate diagnosis fast and cheapest way. Cases of acute appendicitis pose a clinical challenge especially in developing countries where advanced radiological investigations do not appear cost effective and so clinical parameters remain the mainstay of diagnosis. Jawaid A. et al (1999). Through history and clinical examination still remains the mainstay for the diagnosis, but misdiagnosis and negative appendectomy still do occur at quite a high rate. It is the surgeon who has to decide the best management and at a cost effective manner. The decision to operate or not is very important as surgical intervention in acute appendicitis is not without the risk of morbidity and mortality. Even though, a negative appendectomy has a negligible mortality and morbidity of around 10% Baidya N (2007). We conducted a study in Osmania General Hospital applying Alvarado score to 100 clinically suspected cases of acute appendicitis and operated and evaluated histopathologically. We divided the patients into two groups: Group A with Alvarado score less than 7 and are 62 in number. Group B with Alvarado score more than 7 and are 38 in number.

The present study included 100 patients with suspected acute appendicitis out of 100 patients 64 were male (64%) and were 36 females (36%). In our study, male: female 1.7:1. Our study revealed that Alvarado scoring system is more helping in male patients by showing lower negative appendectomy rate and high positive predictive value for male patient as compared to females. In females additional investigation may be required to confirm the diagnosis. Literature also supports this observation. The results showed that Alvarado score is more sensitive in diagnosing acute appendicitis in comparison with histopathology.

References

1. **P.Ronan O` Connell (2013).** The vermiform appendix.chapter 67. In Norman S. Williams. Bailey& love: short practice of surgery 26 th Ed U .K.
2. **Mohamed AA and Bhat NA (2010).** Acute appendicitis dilemma of diagnosis and management. The internet journal of sur-gery 23(2).
3. **Cuschieri A (1995).** The small intestine and vermiform appendix; In: Cuscheri A, G R Giles, A R Mossa.(ed). Essential surgical practice. 3rd ed. London: Butter worth Heinman. ;1325-1328
4. **Pal KM, Khan A (1998).** Appendicitis, a continuing challenge. J Pak Med Assoc :48:189-192.
5. **Kumar V, Cotran RS, Robbins SL (1992).** Appendix; In Robbin`s Basic Pathology. 5th ed. London: W.B Saunders ; 520 .
6. **Peterson.Mc.Holbrook. J.H. Hales D. (1992)** Contributions of history physical examination and labarotry investigation in maley medical diagnosis investigation .J.Med .156;163-165.pmc.free article (pub med).
7. **Dado G, Anania G, Baccarani U, Marcotti E, Donini A, Risaliti A (2000).** Application of a clinical score for the diagnosis of acute appendicitis in childhood. J Pediatr Surg ;35: 1320-1322.
8. **Kalan M, Talbot D, Cunliffe WJ (1994) et al.** Evaluation of the modified Alvarado score in the diagnosis of acute appendicitis: a prospective study. Ann R Coll Surg.;76:418–419.
9. **Ohmann C, Franke C, Yang Q (1999).** Clinical benefit of diagnostic score for appendicitis: results of a prospective interventional study. German study group of acute abdominal pain.Arch Surg ;134:993–996.
10. **Alvarado A (1986).** A practical score for early diagnosis of acute appendicitis. Ann Emerg Med;15:557–564
11. **Chan.My.Teo.Bs.Ng.Bc (2001).**The Alvarado score and acute appendicitis Ann. Acad.Med.singapore .30.(5) 510-512.Pubmed .
12. **Carrie E Black (2000).** Clinical manifestations and diagnosis of appendicitis in adult.Hong Kong Medical Journal :6:254.
13. **Dehizbashi A, Unluer EE (2003).**The role of emergency medicine resident using the Alvarado score in the diagnosis of acute appendicitis compared with the general surgery resident. European Jounal of Emergency Medicine ;10:296-301