PROTOCOL BASED DIAGNOSIS OF APPENDICITIS

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ABSTRACT

Objective: Evaluation of Modified Alvarado Scoring System (MASS) in the diagnosis of acute appendicitis.

Material and Methods: This was prospective study conducted on patients in Surgical Unit, Agency Headquarter Hospital Landikotal from Jan 2002 to Dec 2002, who were admitted through emergency, out patient department with suspicion of acute appendicitis.

Results: 100 patients were examined under protocol of MASS while 85 patients were having score >7 were operated upon. Average age of the patients was about 28 years. 65 were male and 20 females. 76 patients had appendicular pathologies. Predictive value of MASS was about 89%.

Conclusion: High values in acute appendicitis validate the use of this protocol for the diagnosis of acute appendicitis.

Key words: appendicitis, Modified Alvarado Scoring System, protocol.

INTRODUCTION

Acute appendicitis was and is the commonest surgical emergency reported the world over. Its presentations can mimic variety of acute medical and surgical abdomino-thoracic conditions. Inspite of advancements in medical diagnostics its diagnosis mainly remains clinical one.

Over the last one or two decades different protocols have been introduced and tested to make an early diagnosis of this sometimes very elusive disease. A. Alvarado in 1986 introduced a criterion for the diagnosis of acute appendicitis which was later modified to accommodate additional parameters along with original Alvarado scoring system.[1,2,3,4] (Table-1)

Other modalities like sonography of abdomen been implied for the diagnosis of acute appendicitis but with limited success.[5,6,7,8] Now MASS has been accepted as reasonable protocol for the diagnosis of acute appendicitis and its efficacy has been tested by different researchers.[2,4,9,10,11] We at

MODIFIED ALVARADO SCORING SYSTEM (MASS)

Features	Score
Migration of pain to RLQ	(1)
Anorexia	(1)
Nausea/Vomiting	(1)
Tenderness in the RLQ	(2)
Rebound Tenderness	(1)
Temperature >37.3c	(1)
White Cell Count >10,000/cu ml	(1)
RLQ = *Right Lower Quadrant*	
ACTION	
< 4 Points = Exclude	
5-6 Points = Monitor	
> 7 Points = Operate	

TABLE – 1

AHQ Hospital also evaluated its efficacy in the diagnosis of acute appendicitis on one hundred patients.

MATERIAL AND METHODS

This prospective study was conducted on 100 patients who presented with symptoms and signs of acute appendicitis. The patients were admitted through emergency and out patients department. After going through complete clinical examination, basic investigations were performed which included total leucocytes count (TLC), Urine R/E, X-Rays abdomen (erect) and abdominal sonography (in female patients).

After investigation, MASS was applied to these patients (recorded on specially designed chart).

Patients were subjected to surgery after informed consent. Incisions used were Grid Iron, Lanz, Rutherford-Morison, Lower right paramedian and lower midline. In couple of patients, two incisions had to be given i-e in cases of perforated gall bladder and perforated duodenal ulcer, as it is impossible

Age/Sex Distribution	# of patients
Age	
12-30 Years	(65)
31-50 Years	(15)
> 50 Years	(5)
Sex	
Male	(65)
Female	(20)

TABLE – 2

MASS APPLIED TO 85 PATIENTS

Clinical Features	# of patients	Percentage
Migration of Pain to RLQ	77	90%
Anorexia	80	94%
Nausea/Vomiting	85	100%
Tenderness in RLQ	82	96%
Rebound tenderness	75	88%
Temperature > 37.3C	6	7%
White cell count > 10,000/cu.ml	77	90%

TABLE – 3

to approach these structures through above-mentioned incisions commonly used for appendicectomies. In patients who had generalized peritonitis, a pelvic drain was put in after peritoneal cavity wash. (Table-4)

RESULTS

85 patients had MASS > 7 while 15 patients had MASS 5-6 (were not included further in the study). Amongst these 85 patients 65 were males and 20 females. (Table-2, 3).

As it is evident from Table-4, 76 patients (86%) had appendicular pathologies including catarrhal, gangrenous and perforated appendices. Higher results of MASS were obtained in male patients and in those patients who had no generalized tenderness

OPERATIVE FINDINGS

Pathology	# of patients
Appendicular	76
Perforated Duodenal Ulcer	1
Perforated Gall Bladder	1
Typhoid ileal Perforation	2
Tuberculous ileal perforation	1
Ectopic Pregnancy	2
Ovarian Pathologies	2

TABLE – 4

and guarding. Lower values in female patients were due to presence of ovarian pathologies. Some of the clinical features had higher values in all patients like nausea and vomiting (which are common in all abdominal ailments). (Table-3)

All 85 patients subjected to surgery had MASS > 7 but only 9 patients had pathologies other than appendicitis. This high predictive value of MASS in cases of acute appendicitis is understandable because this protocol is designed to diagnose the acute appendicitis.

15 patients who had MASS of 5-6 were monitored and later on 8 of these patients also underwent surgery for appendicitis giving the predictable value to about 53% which could be due to use of antibiotics or loss of patients to other institutions.

DISCUSSION

Acute appendicitis has been afflicting mankind as far as the history is known. This is the commonest emergency confronted by general practitioners and surgeons at large. As it can mimic many abdomino-thoracic emergencies, thorough clinical examination integrated with some basic investigations at the time of presentation is paramount importance to reach the appropriate diagnosis and treatment strategy.

Delay in diagnosis and in decision to operate or not to operate can be disastrous for the patients. Being the commonest emergency it's the commonest cause of post-operative complications both early and late, which can be not only financial but also psychological burden on the patient. Keeping in mind these facts different protocol were introduced to make early diagnosis of acute appendicitis by different researchers which include Lidverg, Fenyo, Christian, Ohman and Alvarado Scoring System. All these scoring systems depended upon clinical features and some basic investigations applied in different fashions. Of all these protocols modified Alvarado Scoring System (MASS) has been widely accepted after it was successfully tested in different studies.[1,3,12] (table-1) MASS has been also evaluated in combination with abdominal sonography but no added advantage was noticed except in female patients where pelvic pathologies can be excluded confidently.[5,6,7,8,12]

Now-a-days emphasis is on to follow to certain protocols to treat different disease to reduce the work load on hospital staff, cut down financial burden on hospitals as well as on the patients.

We at surgical unit followed MASS for the diagnosis and treatment of acute appendicitis. In 85 patients who underwent emergency surgeries, 76 had appendicular pathologies meaning MASS has an accuracy rate of about 89%.[6,9,11] High values were noticed in male patients as compared to female patients probably due to presence of genital system (i-e ovaries etc).[3,11,13]

CONCLUSION

Although this study was conducted on limited number of patients with some selection bias but it does validate the

efficacy of MASS for the diagnosis and treatment of acute appendicitis.

We conclude that protocol like MASS comes very handy in peripheral hospitals where back up facilities are sparse. It can be very helpful for junior doctors and general practitioners provided it is applied purposefully and objectively in patients of abdominal emergencies.

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