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Original Article

A comparative study of diagnostic accuracy of clinical or other diagnostic modalities, used either alone or combined together in diagnosis of acute appendicitis in AVMC Jan 2013- September 2014.

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ABSTRACT

The study advocate routine use of pathological parameters & medical imaging for equivocal / suspicious cases & specific sub-group patients for diagnosis of acute appendicitis , though clinically highly suggestive diagnosed acute appendicitis can be considered for appendicectomy, without further delay for other modalities. Ultrasound is an added advantage with high clinical suspicion. A Combined approach of clinical & patho-radiolgical diagnostic modalities together provides a much better definitive diagnostic accuracy in diagnosis of acute appendicitis, than either one used alone.

1. Introduction

Almost about 6% of population is expected to have appendicitis in their life-time. Though , acute appendicitis is the most common surgical abdominal emergency, out of all abdominal surgical emergencies and the commonest general surgical abdominal operation done, in any institute. This is the first operation usually done by Surgeons during their training period.

Acute appendicitis is supposed to be traditionally & essentially a clinical diagnosis; however, not all patients present with the 'classical' symptoms and signs of acute appendicitis. Therefore since beginning , its definitive pre-operative diagnosis is by no means a simple one to establish and at several occasions, it seems impractical to have a definitive preoperative diagnosis, which has always been a diagnostic challenge & dilemma .

Proper pre-operative definitive diagnosis is too significant in order to reduce the rate of ---

- Appendicular perforation and peritonitis
- Negative Appendicectomy.

World literature reports morbidity around 10%. Recent modalities have demonstrated a reduction in the negative appendectomy rate from 12–29% to 3–11%. Absolute confirmed diagnosis of course is only possible at exploration and histopathology examination of the specimen.

This retrospective study investigated & compared the value of clinical assessment ,or patho-Radiological imaging (ultrasonography) used either alone or combined together for diagnosis of presumed acute appendicitis.

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PURPOSE OF STUDY

The aim of the present study is to evaluate and compare diagnostic accuracy of clinical , patho-radiological diagnostic modalities, used either alone or together in diagnosis of acute appendicitis in AVMC Pondicherry.

DESIGN OF STUDY

A retrospective study : The study was the only observational and no intervention was done except for the addition of formalized data collection .The study reviewed all patient's medical records who underwent appendicectomy for presumed acute appendicitis in AVMC during Jan 2013 to September 2014. All the datas from medical records were analysed , including both gender and all age group .

MATERIAL – METHOD

Patient Inclusive Criteria :

All patients who underwent appendicectomy for presumed acute appendicitis at our institution during Jan 2013 to September 2014

Total Patients : 115

male – 65 , female 50

According to age

Male <65---55

Children<14 yrs—14 (10 M+ 4 F)

Female reproductive age-39

Female > 45 yrs- 7

Patients of specific sub- groups were considered as follow-

1. Extreme age group: age > 65 yrs
2. Pediatric age group : age <14 yrs
3. Non-pregnant Women of reproductive age group

The specific sub-groups routinely subjected to the other diagnostic modalities to reduce the rate of negative appendicectomy & to prevent the appendicular perforation / peritonitis and due to doubtful diagnosis.

Exclusion criteria:

Patients with :

*Urological, Gynaecological or obstetrical problems

*Surgical problems other than appendicitis,

* Mass in right iliac fosse ,

Non-operated cases of RIF pain ,

*Incomplete documentations in the case sheets

Patient with equivocal sign- symptoms i.e. Suspected appendicitis , were admitted to hospital for a period of observation, laboratory investigations and medical imaging. This approach can be associated with its own morbidity and financial costs.

Diagnostic strategy based on :

*Clinical assessment by general surgeon :

*laboratory investigations : at clinician discretion

*Radiological imagining: equivocal / sub-group cases

1. Clinical History & clinical examination : Previous h/o similar milder/ severe RIF pains, treated conservatively. Recent H/o anorexia .

Duration of symptoms , location of initial pain, migration of pain, Pain RIF with no radiation, Triad of Pain, nausea/ Vomiting & fever ,RIF Tenderness, Rebound tenderness guarding, rigidity, Rovsing sign, Obturator sign, psoas sign, Shifting tenderness, Shifting dullness, cough reflex,

Clinical examination--- to exclude other entity , rectal examination in all cases and vaginal examination in those women where indicated

No H/o menstrual disturbances, vaginal discharge, pain radiation, hematuria , dysuria, constipation etc.

2.Supportive Pathological Datas:

Routine :

TLC : > 12000/mm3 , DLC : shift to left (neutrophils- high with bi-lobed nuclei)

CRP, Urine-routine

Specific : Gravindex test, High vaginal swab for C/S, Stool Examination

3.Radiological

U/S abdomen & Pelvis :

*Non-Compressible,non-peristaltic Appendix

*Peri-appendiceal fluid

*Appendicular diameter > 7 mm

*Fecolith +ve

X-Ray : (If Indicated)

Adomen AP view Erect

KUB

IVU

Proforma 1-

Patient name Age &sex Registration no	**Final diagnosis Per-operative gross / histopathological**
Clinical complain	
Clinical diagnosis	
TLC/DLC	
USG	

Proforma 2

Diagnostic criteria Clinical	**Highly suggestive Equivocal**
Pathological TLC –DLC	
USG	

Study group

- Group I- Clinical Evaluation group : clinically highly suggestive of acute appendicitis

*GROUP II- Patho-radiological Evaluated Group: clinically doubtful cases +

Special subgroup cases + positive USG cases

*Group III: Combined Group : Clinically positive and USG positive cases

*Strong Clinical diagnosis (excluding specific subgroup) : (Without considering diagnostic patho-radiological modalities) : Considered for appendicectomy

* Clinically equivocal acute appendicitis -: patient subjected to Patho- Radiological modalities---managed accordingly..

* specific sub-group , patients were subjected to undergo other modalities ,to confirm diagnosis.

*supportive modalities positive for appendicitis --- Appendicectomy

Confirmatory Diagnostic Criteria :

The only criteria for confirmed diagnosis of acute appendicitis has been accepted as

1. Gross per-operative positive findings (at Exploration)
2. Histological Criteria of acute appendicitis

Positive Per-operative findings included as :

Gross inflamed ,oedematous appendix / perforated ,gangrenous appendix with surrounding fluid/pus collection.

Histologically criteria for confirmed diagnosis of acute appendicitis accepted as :

infiltration of the muscularis propria with polymorpho-nuclear leukocytes.

Histologically exclusive criteria : results as 'appendix with congestion' without any additional finding accepted as negative appendectomy .

The patients in each group were discharged when they were symptom free, a-febrile, ambulatory, communicating, taking adequate amount of diet and passing stools and flatus. Over all mean hospital stay duration was 4 days, ranging from 24 hours to 8 days.

RESULT

In this study the retrospective data of 115 patient collected , out of them (56.5%) male 65cases and (43.5 %) female 50 cases range 07-65 years.

Total WBC count (>11500) high in (87.82%) 101cases,

Ultrasound performed in 68 cases (59.13%) patients with suspicious/equivocal clinical diagnosis and specific subgroup, out of them USG positive cases 58 (85.29%) histopathologically proved 53 cases (91.38%) histopathology reports diagnosed-total 108 cases/115 (93.91%) patients as acute appendicitis, out of them 7 cases(6.48%) acute appendicitis with peri-appendicits as acute suppurative appendicitis, gangreneous/perforated appendix, 7 cases (6.08%) histological normal.

Group 1 Clinically diagnosed (including specific subgroup) 106 cases (92.17%)--- 101 HPE +(94.4%)

Group II Patho-radiologically diagnosed(suspicious /doubtful + specific subgroup) 68 cases (59.13%) --- USG positive 58 cases (85.29%) , 53 HPE+(91.38%)

Group III Clinically + pathoradiologically (combined group) 53 cases—53 HPE + (100%)

Diagnostic criteria	**Clinically diagnosed cases 106/115**	**Specific sub group/ equivocal / Positive USG 58/68**	**Combined group i.e. Clinically positive / USGpositive 53/53**
HPE positive	100/106	53/58	53/53
Paedritric <14 yrs (14/115)HPE	10/14	9/10	09/14
NP F reproductive age (39/115)cases HPE	38/39	37/38	37/39
Adult male (55/115) cases HPE	53/55		7/55
Adult female >45 yrs(7/115) HPE	7/7		
Equivocal cases (12/92)	11/11	7/11	----

CONCLUSION

The study advocate routine use of pathological parameters & medical imaging for equivocal / suspicious cases & specific sub-group patients for diagnosis of acute appendicitis , though clinically highly suggestive diagnosed acute appendicitis can be considered for appendicectomy, without further delay for other modalities. Ultrasound is an added advantage with high clinical suspicion.

"A Combined approach of clinical & patho-radiolgical diagnostic modalities together provides a much better definitive diagnostic accuracy in diagnosis of acute appendicitis, than either one used alone."

The Combined approach resulted :

*The false positive rate is reduced to zero when all modalities combined show positive..

*The rate of negative appendicectomy reduced to nil.

*The complications i.e. appendicular perforation & peritonitis reduced significantly as early confident surgical intervention were performed ,without unnecessary & undue delay period of confusion & observation. However, the additional information provided by diagnostic modalities does improve diagnostic accuracy in the case of a equivocal clinical modality.

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