



DIGITAL RECTAL EXAMINATION NOT APPROPRIATE FOR ACUTE APPENDICITIS

Yashwant R. Lamture¹., Varsha P.Gajbhiye^{2*} and Shinde R.K¹

¹Department of Surgery, Jawaharlal Nehru Medical College Sawangi Meghe,
Wardha, Maharashtra, India 442001

²Department of Pharmacology, Jawaharlal Nehru Medical College Sawangi Meghe,
Wardha, Maharashtra, India 442001

ARTICLE INFO

Article History:

Received 20th April, 2017
Received in revised form 23rd
May, 2017
Accepted 7th June, 2017
Published online 28th July, 2017

Key words:

Appendicitis, rectum, pelvis

ABSTRACT

Introduction: A prompt and accurate diagnosis of appendicitis is crucial. Careful history taking and physical examination have an important role in the correct diagnosis. The physical examination for diagnosis of appendicitis, digital rectal examination (DRE) has been considered a very important. This traditional teaching that DRE should be performed routinely in all patients with abdominal pain has been supported in most surgical textbooks. On the other hand, several articles found that DRE only occasionally gives useful information for evaluation of acute appendicitis and it often causes discomfort to the patient. To date, some review articles investigated the role of DRE for diagnosis of acute appendicitis. Digital rectal examination (DRE) has been traditionally recommended to evaluate acute appendicitis, although these reports indicate its lack of utility for this diagnosis. Hence, the aim of the current study was to determine role of DRE by finding its accuracy.

Material and method: In the prospective longitudinal and observational study involving the patients between any age group coming to the hospital with Right Iliac Fossa pain. The data was analysed using the SPSS 17.0 statistical software. The sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) of DRE calculated. Ethical approval for the study was obtained from the Ethics Committee Review Board of DMIMS University

Observation: Around 418 subjects were included in the study, consists of 251(60.05) of males and 167(39.95) from female gender.

Discussion and Conclusion: Acute appendicitis cannot be ruled in or out through the results of digital rectal examination. Reconsideration is warranted for the traditional teaching that digital rectal examination should be performed routinely in all patients with suspected appendicitis. Situations in which the digital rectal examination has an important role should be further investigated.

Copyright © 2017 Yashwant R. Lamture et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

The classical signs and symptoms of acute appendicitis were first reported by Reginald Haber Fitz (America) in 1886. Since then it has remained the most common diagnosis for hospital admission requiring laparotomies. Approximately 6% of the population will suffer from acute appendicitis during their lifetime; therefore, much effort has been directed toward early diagnosis and intervention. This effort has successfully lowered the mortality rate to less than 0.1% for non complicated appendicitis, 0.6% where there is gangrene and 5% for perforated cases. The diagnosis of appendicitis can be difficult, occasionally taxing the diagnostic skills of even for the most experienced surgeon. Equivocal cases usually require inpatient observation. This delay in diagnosis may increase the morbidity and costs. Attempts to increase the diagnostic accuracy in acute appendicitis have included computer aided diagnosis, imaging by ultrasonography, laparoscopy and even

radioactive isotope imaging. Various scoring systems have been devised to aid diagnosis¹.

A negative appendectomy is taken as a surgery performed for a preoperative diagnosis of appendicitis those result in a normal histopathology specimen. Different techniques have been devised to assist in equivocal cases in attempts to decrease negative appendectomy rates (NAR). A number of scoring systems have been used for aiding in early diagnosis of acute appendicitis and its prompt management. These scores make use of clinical history, physical examination and laboratory findings. The diagnosis of acute appendicitis is based on history, clinical examination and a few laboratory investigations and patients with equivocal signs can present a diagnostic challenge. In all cases, however, a definitive diagnosis can only be obtained at surgery and after pathological examination of the surgical specimen. Prior to surgery the diagnostic accuracy of acute appendicitis remains unsatisfactory, ranging from 25 to 90% and being worse in

females than in males. Also a NAR of 20-40% has been documented and many surgeons would accept a rate of 30% as inevitable.²

Therefore, a prompt and accurate diagnosis of appendicitis is crucial. Careful history taking and physical examination have an important role in the correct diagnosis³. the physical examination for diagnosis of appendicitis, digital rectal examination (DRE) has been considered a very important⁴. This traditional teaching that DRE should be performed routinely in all patients with abdominal pain has been supported in most surgical textbooks^{5,6}. On the other hand, several articles found that DRE only occasionally gives useful information for evaluation of acute appendicitis^{7,8} and it often causes discomfort to the patients^{9,10}. To date, some review articles investigated the role of DRE for diagnosis of acute appendicitis^{7,8,11,12,13,14}. Digital rectal examination (DRE) has been traditionally recommended to evaluate acute appendicitis, although these reports indicate its lack of utility for this diagnosis¹⁵. Hence, the aim of the current study was to determine role of DRE by finding its accuracy.

METHODOLOGY

Type of study (research design): Prospective observational study.

Place of study: Acharya Vinoba Bhave rural hospital, India

Period of study: Jan. 2012 - Jan. 2017

Source of data

The source of data for our study is the patients coming to Acharya Vinoba Bhave Rural Hospital Sawangi Meghe, Wardha India

Participant and sampling procedure

Patient of any age group with Right Iliac Fossa pain during study period between January 2012 to Jan. 2017. Operated for appendicectomy and subjected for histopathological examination.

Sample size

Numbers of cases studied were 418. The inclusion and exclusion criteria were as follows:

Inclusion criteria

Patients between any 15-60 who presented with Right Iliac Fossa pain clinically suspected to be Acute Appendicitis.

Exclusion criteria

- 1) Pregnant women.
- 2) Patients with Right Iliac Fossa mass.
- 3) Patients with previous history of Urolithiasis and Pelvic Inflammatory Disease.
- 4) Laparoscopically operated appendectomies (LA) in an elective setup.

LA cases were not included as facility of laparoscopy was not available in emergency set up.

Data collection tools and process, variables, definitions, analysis plan

In the prospective longitudinal and observational study involving the patients between any age group coming to the hospital with Right Iliac Fossa pain, informed consent was taken from them. The patients were observed from admission

till discharge from the Hospital. The daily follow up including monitoring of vitals and systemic examination twice a day was done. The histopathology findings were documented. All patients in present study were subjected for open appendicectomy (OA).

Patients were observed as follows

- Digital rectal examination(DRE)
- Blood examination
- Routine Urine examination
- Ultrasonography done by consultant Radiologist
- Noted intraoperative anatomical position of appendix
- Histopathology Examination of the specimen after surgery

The data collected included the patient`s demographics, age and gender, the presenting symptoms and clinical signs including DRE, laboratory investigations (white cell count and C Reactive Protein) and ultrasonography. Confirmation of acute appendicitis as the final diagnosis was obtained from a histopathological analysis of the resected appendix at the Department of Histopathology at AVBRH.

The data was analysed using the SPSS 17.0 statistical software. The sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) of DRE calculated. Ethical approval for the study was obtained from the Ethics Committee Review Board of DMIMS University

RESULTS

Table no. 1 Hemoglobin level

variable	total	mean	std.deviation	minimum	maximum
Hemoglobin	418	12.29	1.6	9.4	15

Table no. 2 Total Leucocyte Count (TLC)

variable	total	mean	std.deviation	minimum	maximum
TLC	418	10450.28	2617.214	3300	20500

Table no. 3 Type of Incision

Type of Incision	Frequency	percentage
Mc Burney`s	396	94.74
Right paramedian	22	5.26
Total	418	100

Table no. 3 a Frequency of rectal examination

rectal examination	Frequency	percentage
normal	388	92.82
pelvic tenderness present	30	7.18
total	418	100

b Sensitivity and specificity of rectal examination

Sensitivity	90%
Specificity	12.1%

c Negative and positive predictive value of rectal examination

Positive predictive value	7.34%
Negative predictive value	94%

DISCUSSION

Around 418 subjects were included in the study, consists of 251(60.05) of males and 167(39.95) from female gender. Clinically diagnosed as acute appendicitis subjected for thorough clinical examination including DRE, lab investigations, USG abdomen and subjected appendiceal specimen for histopathological examination after surgery. Hemoglobin evaluated was in range of 9.4 gm/dl to 15 gm/dl with mean level of 12.29/dl (see table no.1).TLC was in range of 3300 to 20500 with mean level of 10450.28 (see table no.2).

All patients were operated by open appendicectomy method. In 396 (94.74%) patients Mc Burney's grid iron incision and in remaining 22 (5.26%) patients right paramedian incision was taken to remove appendix (see table no. 3).

According to the many authors, the vermiform appendix is the only organ in the human body which has multiple definitive anatomical positions. Its position varies from individual to individual. The position of the vermiform appendix was of great interest not only because of its evolutionary significance but also because of its pathological and surgical importance. Appendicitis was a common medical problem in man and woman at all ages from childhood to old age. The position of the organ was important in the clinical presentation, surgical approach and prognosis of the appendix related diseases¹⁶.

In present study we find various intra operative positions of the appendix. Most common position was retrocaecal in 258(61.72%). In study done by Rahaman *et al*¹⁵ found pelvic as a commonest position in Bangladeshi people and retrocecal was second common position.

Rectal examination in acute appendicitis done in present study was with positive findings like pelvic tenderness in only 30(7.18%) cases. Correctly correlate with 7% pelvic position of appendix (see fig.1). Sensitivity and specificity rectal examination were 90 % and 12.1% respectively. With negative and positive predictive value of 94% and 7.34% respectively (see table no. 4), this valuable sign is of less significance because it was positive in very less number of cases. Results of Takada T, Nishiwaki *et al*¹⁵ were similar to our study. In conclusion his systematic review and meta-Analysis states that acute appendicitis cannot be ruled in or out through the results of digital rectal examination. Reconsideration is warranted for the traditional teaching that digital rectal examination should be performed routinely in all patients with suspected appendicitis. Situations in which the digital rectal examination has an important role should be further investigated; similar situation was observed in present study.

References

- Ahmed M. Al-Hashemy, Mohamed I. Seleem, Appraisal of the modified Alvarado Score for acute appendicitis in adults. *Saudi Medical Journal* 2004; Vol. 25 (9): 1229-1231
- M. M. Wani, M. N. Yousaf, M. A. Khan, A. Baba Abdul, M. Durrani, M. M. Wani & M. Shafi: Usefulness Of The Alvarado Scoring System With Respect To Age, Sex And Time Of Presentation, With Regression Analysis Of Individual Parameters . *The Internet Journal of Surgery*. 2007 Volume 11 Number 2
- Park J S, Jeong J H, Lee J I, Lee J H, Park J K, Moon H J. Accuracies of diagnostic methods for acute appendicitis. *Am Surg*.2013; 79:101-106. PMID:23317620
- Chandrasekaran T V, Johnson N. Acute appendicitis. *Surgery*.2014; 32:413-417.
- Silen W. Cope's early diagnosis of the acute abdomen. 22thed. New York: Oxford University Press; 2010.
- Mary E K, Abdulhameed A, Ankit B, Amy C F,Matthew R P. The Washington Manual of Surgery. 6thed. Philadelphia: Lippincott Williams & Wilkins; 2011.
- Brewster G S, Herbert M E. Medical myth: a digital rectal examination should be performed on all individuals with possible appendicitis. *West J Med*. 2000;173:207-208.PMID:10986194
- Kessler C, Bauer S J. Utility of the digital rectal examination in the emergency department: a review. *J EmergMed*.2012; 43:1196-1204. doi:10.1016/j.jemermed.2012.06.015PMID:22883714
- Dickson A P, MacKinlay G A. Rectal examination and acute appendicitis. *Arch Dis Child*.1985;60:666- 667. PMID:4026364
- Macias D J, Sarabia M J, Sklar D P. Male discomfort during the digital rectal examination: Does examiner gender make a difference? *Am J Emerg Med*.2000;18:676-678.PMID:11043620
- Khoshnood A, Ekelund U. Routinerectal palpation in acute abdomen has no proven value. *A review of the literature. Lakartidningen*.2014; 111:89-90. PMID: 24 552011
- Muris J W, Starmans R, Wolfs G G, Pop P, Knottnerus J A. The diagnostic value of rectal examination. *FamPract*.1993;10:34-37.PMID:8477890
- Jesudason E C,Walker J.Rectal examination in paediatric surgical practice. *Br J Surg*.1999;86:376-378.PMID:10201782
- Andersson R E.Meta analysis of the clinical and laboratory diagnosis of appendicitis. *Br J Surg*. 2004; 91:28-37.PMID:14716790
- Takada T, Nishiwaki H, Yamamoto Y, *et al*. The Role of Digital Rectal Examination for Diagnosis of Acute Appendicitis: A Systematic Review and Meta-Analysis. *PLOS ONE*. 2015;10(9):5-15
- Rahman MM , Khalil M , Rahman H , Mannan S , Sultana SZ , Ahmed S, Anatomical Positions of Vermiform Appendix in Bangladeshi People, *J Bangladesh Soc Physiol*. 2006 Dec;(1):5-9.
