Original Article

Appendectomy

Comparison of Negative Appendectomy Rate between Alvorado Score and Adult Appendicitis Score at Allama Iqbal Memorial Teaching Hospital Sialkot

Adnan Butt[1], Nimra Ikram[1] and Kamran Hamid[2]

ABSTRACT

Objective: To study Comparison of Negative Appendectomy rate between Alvorado score and Adult Appendicitis score at Idrees Teaching Hospital, Sialkot & Allama Iqbal Memorial Teaching Hospital, Sialkot.
Design of Study: Prospective study
Place and Duration of Study: This study was conducted at the Emergency department of Idrees Teaching Hospital, Sialkot & Allama Iqbal Memorial Teaching Hospital, Sialkot during April 2015 to April 2017.
Materials and Methods: We analyzed data of 1139 appendectomies prospectively over period of 2 years for negative appendectomies at emergency department of Allama Iqbal Memorial teaching Hospital Sialkot. Patients were divided in two groups (Group A 579 cases according to Alvorado score and Group B 560 cases according to Adult Appendicitis Score). Negative appendectomy rate for both groups was calculated after histopathology report. The Performa was designed to record age, gender, positive appendectomies and negative appendectomies. The data was analyzed for results on SPSS version 10.
Results: The incidence of appendectomy was highest (42.66%) cases 486 at the age group 15-25 years and this incidence went on decreasing with advancement of age. There was higher incidence (54.52%) 621 cases of appendectomy in male population and (45.47%) 518 cases in female population coming to the emergency department. According to histopathology the incidence of negative appendectomy was (19.22%) 219 cases in group A and (3.59%) 41cases in group B but the incidence of positive appendectomy was (29.32%) 334 cases in group A and (42.58%) 485cases in group B. According to Alvarado (MANTRELS) score the incidence of negative appendectomy was (19.22%) 219 cases but according to adult appendicitis score the incidence of negative appendectomy was (3.59%) 41 cases.
Conclusion: It showed that adult appendicitis score is much better than Alvarado score for diagnoses of appendicitis.
Keywords: Negative Appendectomy, Alvorado score, Adult Appendicitis score.

Citation of articles: Butt A, Ikram N, Hamid K. Comparison of Negative Appendectomy Rate between Alvorado Score and Adult Appendicitis Score at Allama Iqbal Memorial Teaching Hospital Sialkot. Med Forum 2018;29(1):10-13.

INTRODUCTION

Intense an infected appendix is the most widely recognized sign for emergency surgery around the world, with rate of 1.17 for each 1000 and lifetime danger of 8.6% in men and 6.7% in ladies. The frequency is most elevated in youths and youthful grown-ups, however the rate of confounded an infected appendix indicates little change between various age groups[1,2].

[1.] Department of Surgery, Idrees Teaching Hospital, Sialkot.
[2.] Department of Surgery, Khawaja M.Safdar Medical College, Sialkot.

Correspondence: Adnan Butt, Medical Officer, Department of Surgery Idrees Teaching Hospital, Sialkot.
Contact No: 0331-6681043
Email: fundamentalist_butt1@yahoo.com

Received: May, 2017; Accepted: July, 2017

In spite of the fact that an exceptionally normal and long-known marvel, a ruptured appendix remains an analytic test for specialists and emergency doctors. Clinical conclusion alone prompts a negative appendectomy rate of 15 to 30%. The analysis is exceptionally trying for ladies of rich age[3,4,5]. Early surgical mediation is the customary highest quality level for avoiding affixed puncturing. High rate of superfluous negative appendectomies, be that as it may, prompts pointless grimness and even mortality[6,7]. The incessant utilization of figured tomography (CT) with its high affectability and specificity in finding of an infected appendix has diminished the quantity of negative appendectomies[4,8,9]. Preoperative CT appears to profit most ladies 45 years of age and more youthful[10,11]. The utilization of CT may, be that as it may, postpone appendectomy in clinically run of the mill instances of intense a ruptured appendix, and in this manner even raise the hazard for puncturing[12,13]. Expanded utilization of CT is related with hoisted danger of disease particularly in youthful patients,

whose occurrence of intense a ruptured appendix is most prominent[14]. A few scoring frameworks for diagnosing an infected appendix as of now exist[15-21]. The best known is the Adult Appendicitis Score**.**

MATERIALS AND METHODS

We analyzed data of 1139 appendectomies prospectively over period of 2 years for negative appendectomies at emergency department of Idrees Teaching Hospital, Sialkot & Allama Iqbal Memorial teaching Hospital Sialkot. Patients were divided in two groups (Group A 579 cases according to Alvorado score and Group B 560 cases according to Adult Appendicitis Score). Negative appendectomy rate for both groups was calculated after histopathology report. The performa was designed to record age, gender, positive appendectomies and negative appendectomies. The data was analyzed for results on SPSS version 10.

RESULTS

There were two diagnostic scores for appendicitis as shown in following table.

Table No.1: Alvarado (Mantrels) score.

The Alvarado (Mantrels) Score .	**Score**
Symptoms	
Migratory RIF pain	1
Anorexia	1
Nausea and vomiting	1
Signs	
Tenderness (RIF)	2
Rebound tenderness	1
Elevated temperature	1
Labs	
Leukocytosis	2
Shift to left	1
Total	10

RIF, right iliac fossa

The incidence of appendectomy was highest (42.66%) cases 486 at the age group 15-25 years and this incidence went on decreasing with advancement of age (table 3). There was higher incidence (54.52%) 621 cases of appendectomy in male population and (45.47%) 518 cases in female population coming to the emergency department (table 4).

Table No.2: Adult Appendicitis Score

Symptoms		**Score**
Pain in RLQ		2
Pain Relocation		2
RLQ Tenderness		3/1*
Guarding	Mild	2
	Moderate/Severe	4
Laboratory Tests		
Blood Leukocyte Count ($\times 10^9$)	>7.2 and <10.9	1
	>10.9 and <14	2
	>14	3
Neutrophil %	>62 and <75	2
	>75 and<83	3
	>83	4
CRP(mg/L) <24hr	4 and< 11	2
	11 and <25	3
	25 and <83	5
	>83	1
CRP(mg/L) >24hr	12 and <53	2
	53 and <152	2
	>152	1

RLQ right lower quadrant, CRP C reactive protein
*Men and women age 50+/women, age 16–49

Table No .3: Age distribution in appendectomies

Sr No	**Age (Years)**	**Cases**	**Percentage**
1	15-25	486	42.66%
2	26-36	248	21.77%
3	37-47	171	15.01%
4	48-58	132	11.58%
5	59- 69	81	7.11%
6	79-89	19	1.66%
7	90 & above	2	0.17%
	Total	**1139**	**100 %**

Table No.4:Gender Distributions in appendectomies

Sr No.	**Gender**	**Cases**	**Percentage**
1	Male	621	54.52%
2	Female	518	45.47%
	Total	**1139**	**100 %**

Table No. 5: Distribution of Positive and Negative Appendectomy according to histopathology

Sr. No.	**Positive/Negative Appendectomy**	**Group A**			**Group B**		
		Male (%)	Female (%)	Total (%)	Male (%)	Female(%)	Total(%)
1	Positive Appendectomy	175 (15.36%)	159 (13.95%)	334 (29.32%)	278 (24.40%)	207 (18.17%)	485 (42.58%)
2	Negative Appendectomy	113 (9.92%)	106 (9.30%)	219 (19.22)	20 (1.75%)	21 (1.84%)	41 (3.59%)
3	Other Pathology	16 (1.40%)	10 (0.87%)	26 (2.28%)	19 (1.66%)	15 (1.31%)	34 (2.98)
	Total			**579 (50.83%)**			**560 (49.16%)**

According to histopathology the incidence of negative appendectomy was (19.22%) 219 cases in group A and (3.59%) 41cases in group B but the incidence of positive appendectomy was (29.32%) 334 cases in group A and (42.58%) 485 cases in group B (table 5). According to Alvarado (MANTRELS) score the incidence of negative appendectomy was (19.22%) 219 cases but according to adult appendicitis score the incidence of negative appendectomy was (3.59%) 41 cases (table 6). It showed that adult appendicitis score is much better than Alvarado score for diagnoses of appendicitis.

Table No.6: Distribution of Positive and Negative Appendectomy according to Score

Sr. No.	Score	Positive Appendectomy		Negative Appendectomy		Other Pathology	
		Group A (%)	Group B (%)	Group A (%)	Group B (%)	Group A (%)	Group B (%)
1	Alvorado Score>7	246 (21.59%)	0 (0%)	36 (3.16%)	0 (0%)	10 (0.87%)	0 (0%)
2	Alvorado Score <5	35 (3.07%)	0 (0%)	111 (9.74%)	0 (0%)	7 (0.61%)	0 (0%)
3	Alvorado score 5-6	54 (4.74%)	0 (0%)	72 (6.32%)	0 (0%)	9 (0.79%)	0 (0%)
	Total	335 (29.41%)	0 (0%)	219 (19.22%)	0 (0%)	26 (2.28%)	0 (0%)
4	Adult Appendicitis score>16	0 (0%)	283 (24.84%)	0 (0%)	6 (0.52%)	0 (0%)	7 (0.61%)
5	Adult Appendicitis Score 11-15	0 (0%)	180 (15.80%)	0 (0%)	12 (1.05%)	0 (0%)	12 (1.05%)
6	Adult Appendicitis Score <10	0 (0%)	21 (1.84%)	0 (0%)	23 (2.01%)	0 (0%)	15 (1.31%)
	Total	**0 (0%)**	**484 (42.49%)**	**0 (0%)**	**41 (3.59%)**	**0 (0%)**	**34 (2.98%)**

DISCUSSION

Intense an infected appendix is the most widely recognized sign for emergency surgery around the world, with rate of 1.17 for each 1000 and lifetime danger of 8.6% in men and 6.7% in ladies. The frequency is most elevated in youths and youthful grown-ups, however the rate of confounded an infected appendix indicates little change between various age groups[1,2].

In spite of the fact that an exceptionally normal and long-known marvel, a ruptured appendix remains an analytic test for specialists and emergency doctors. Clinical conclusion alone prompts a negative appendectomy rate of 15 to 30%. The analysis is exceptionally trying for ladies of rich age[3,4,5]. Early surgical mediation is the customary highest quality level for avoiding affixed puncturing. High rate of superfluous negative appendectomies, be that as it may, prompts pointless grimness and even mortality[6,7]. The incessant utilization of figured tomography (CT) with its high affectability and specificity in finding of an infected appendix has diminished the quantity of negative appendectomies[4,8,9]. Preoperative CT appears to profit most ladies 45 years of age and more youthful[10,11]. The utilization of CT may, be that as it may, postpone appendectomy in clinically run of the mill instances of intense a ruptured appendix, and in this manner even raise the hazard for puncturing[12,13]. Expanded utilization of CT is related with hoisted danger of disease particularly in youthful patients, whose occurrence of intense a ruptured appendix is most prominent[14]. A few scoring frameworks for diagnosing an infected appendix as of now exist[15-21]. The best known is the adult appendicitis score[20,21].

CONCLUSION

It showed that adult appendicitis score is much better than Alvarado score for diagnoses of appendicitis.

Author's Contribution:

Concept & Design of Study:	Adnan Butt
Drafting:	Nimra Ikram
Data Analysis:	Nimra Ikram, Kamran Hamid
Revisiting Critically:	Kamran Hamid, Adnan Butt
Final Approval of version:	Adnan Butt

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

1. Addiss DG, Shaffer N, Fowler BS, Tauxe RV: The epidemiology of appendicitis and appendectomy in the United States. Am J Epidemiol 1990;132(5): 910-925.

2. Korner H, Sondenaa K, Soreide JA, Andersen E, Nysted A, Lende TH, et al. Incidence of acute nonperforated and perforated appendicitis: age-specific and sex-specific analysis. World J Surg 1997;21(3):313-317.
3. Hoffmann J, Rasmussen OO: Aids in the diagnosis of acute appendicitis. Br J Surg 1989;76(8): 774-779.
4. Raja AS, Wright C, Sodickson AD, Zane RD, Schiff GD, Hanson R, et al. Negative appendectomy rate in the era of CT: an 18-year perspective. Radiol 2010;256(2): 460-465.
5. Seetahal SA, Bolorunduro OB, Sookdeo TC, Oyetunji TA, Greene WR, Frederick W, et al. Negative appendectomy: a 10-year review of a nationally representative sample. Am J Surg 2011; 201(4):433-437.
6. Flum DR, Koepsell T. The clinical and economic correlates of misdiagnosed appendicitis: nationwide analysis. Arch Surg 2002;137(7): 799-804.
7. Blomqvist PG, Andersson RE, Granath F, Lambe MP, Ekbom AR. Mortality after appendectomy in Sweden, 1987–1996. Ann Surg 2001;233(4): 455-460.
8. Rao PM. Imaging of acute right lower abdominal quadrant pain. Clin Radiol 1998;53(9):639-649.
9. Cuschieri J, Florence M, Flum DR, Jurkovich GJ, Lin P, Steele SR, et al. The SCOAP Collaborative. The SCOAP Collaborative included: Negative appendectomy and imaging accuracy in the Washington state surgical care and outcomes assessment program. Ann Surg 2008;248(4): 557-563.
10. Coursey CA, Nelson RC, Patel MB, Cochran C, Dodd LG, Delong DM, et al. Making the diagnosis of acute appendicitis: do more preoperative CT scans mean fewer negative appendectomies? A 10-year study. Radiol 2010;254(2):460-468.
11. Wagner PL, Eachempati SR, Soe K, Pieracci FM, Shou J, Barie PS. Defining the current negative appendectomy rate: For whom is preoperative computed tomography making an impact? Surgery 2008;144(2):276-282.
12. Lee SL, Walsh AJ, Ho HS. Computed tomography and ultrasonography do not improve and may delay the diagnosis and treatment of acute appendicitis. Arch Surg 2001;136(5):556-562.
13. Busch M, Gutzwiller FS, Aellig S, Kuettel R, Metzger U, Zingg U. In-hospital delay increases the risk of perforation in adults with appendicitis. World J Surg 2011;35(7):1626-1633.
14. Hall EJ: Cancer risks from diagnostic radiology. Br J Radiol 2008;81(965):362-378.
15. Alvarado A. A practical score for the early diagnosis of acute appendicitis. Ann Emerg Med 1986;15(5):557-564.
16. Andersson M, Andersson RE. The appendicitis inflammatory response score: a tool for the diagnosis of acute appendicitis that outperforms the Alvarado score. World J Surg 2008;32(8): 1843-1849.
17. Chong CF, Thien A, Mackie AJ, Tin AS, Tripathi S, Ahmad MA, et al. Comparison of RIPASA and Alvarado scores for the diagnosis of acute appendicitis. Singapore Med J 2011;52(5):340-345.
18. Lintula H, Kokki H, Kettunen R, Eskelinen M. Appendicitis score for children with suspected appendicitis. A randomized clinical trial. Langenbecks Arch Surg 2009;394(6):999-1004.
19. Lintula H, Kokki H, Pulkkinen J, Kettunen R, Grohn O, Eskelinen M. Diagnostic score in acute appendicitis. Validation of a diagnostic score (Lintula score) for adults with suspected appendicitis. Langenbecks Arch Surg 2010;395 (5):495-500.
20. Samuel M. Pediatric appendicitis score. J Pediatr Surg 2002;37(6):877-881.
21. Kiely N, Williams N. Evaluation of the modified Alvarado score in the diagnosis of acute appendicitis: a prospective study. Ann R Coll Surg Engl 1995;77(2):157.