

Comparative Study of Tzanakis Score in effective diagnosis of acute appendicitis Rajendra Prasad Kathula^{1*}, Harshitha Kathula², Surendra Taneeru³

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Abstract

Background: Appendicitis is a common surgical problem. The diagnosis of appendicitis at right point helps in early treatment of the disease. A number of scoring systems have developed in order to diagnose the appendicitis. This study was mainly undertaken to study the efficacy of Tzanakis score in diagnosing Acute appendicitis. **Material and Methods:** An observational study was undertaken in a tertiary care setting. A total of 30 cases of acute appendicitis constituted the sample size. All the patients were subjected for detailed clinical history and clinical examination, laboratory work up along with Tzanakis scoring and Alvarado scoring. The operative decision was made by experienced surgeon based on overall clinical judgement. **Results:** About 53.3% of the study subjects belonged to 21 – 30 years of age group. About 80% of the patients were males. About 46% of the patients presented 6 – 24 hours after onset of symptoms. Pain was the most common symptom of the study group followed by Anorexia, Nausea/ Vomiting and fever. The sensitivity for Alvarado scoring was 90%, specificity was 80%, positive predictive value was 90% and Negative predictive value was 90%. The Tzanaki's score had shown that, the sensitivity was 95.7%, specificity was 85.7%, positive predictive value was 95.7% and negative predictive value was 85.7%. **Conclusion:** The Tzanakis scoring was a good tool in diagnosis of acute appendicitis.

Keywords: Acute appendicitis, Tzanakis score, Alvarado score, Diagnosis, Sensitivity

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Introduction

Acute appendicitis is a common surgical cause of abdomen. This disease is known to occur in young, with 40% of the cases occurring between 10 and 29 years[1,2]. The life time risk of acute appendicitis varies from 8.6% in men and 6.7% in women[3,4]. The accuracy of clinical examination in diagnosing appendicitis varies from 70 to 87%. Approximately 20% to 33% of patients with suspected acute appendicitis have atypical findings making diagnosis difficult[5]. Abdominal ultrasonography is main modality in diagnosis of acute appendicitis where graded compression sonography with adjuvant use of a posterior manual compression technique seems to be useful for detecting the vermiform appendix and for diagnosing acute appendicitis having a sensitivity and specificity of 86% and 81% respectively[6]. A number of scoring systems were developed in order to diagnose appendicitis including Alvarado scoring. A score of more than 7 is considered as diagnosis requiring surgery. The sensitivity and specificity of Alvarado scoring ranges from 73 – 90% and 87 – 92% respectively[7,8].

Tzanaki's score is a combination of clinical evaluation of ultrasonography and inflammatory markers. There are 4 variables and 15 items and a score of more than 8 diagnostic for appendicitis requiring surgery. The sensitivity, specificity are 95.4% and 97.4% respectively[9]. But there are few studies in evaluation of Tzanakis score as diagnostic scoring system in diagnosis of appendicitis. Hence it was decided to take up this study in a tertiary care setting.

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Material And Methods

An observational and comparative study was undertaken in the Department of Surgery of Tertiary care hospital between January 2020 to December, 2020. A total 30 patients undergoing surgery for appendicitis constituted the sample size. Clearance from institutional ethics committee was obtained before the study was started. An informed consent was obtained before including the study subjects in to the study.

All the patients posted for open / laparoscopic appendicectomy were included in to the study. The children aged less than 12 years, not fit/ willing for surgery, appendicular perforation, appendicular abscess, appendicular mass, equivocal findings in ultrasonography, delayed presentation, pregnant patients, patients undergoing interval appendicectomy were excluded from the study. All the patients were subjected for detailed clinical history and clinical examination, laboratory work up along with Tzanakis scoring and Alvarado scoring. The operative decision was made by experienced surgeon based on overall clinical judgement.

The information pertaining to operative findings, type of surgery performed (Open or laparoscopic surgery); and the gross appearance of the appendix as described by the operating surgeon were captured in a predesigned, pre administered proforma. The specimens were sent for histopathological examination and negative appendicectomy rate were then calculated. The predictive accuracy of both Alvarado scoring and Tzanakis score were then calculated. Appropriate statistical tests were used for analyzing the data.

Results

Table 1: Distribution of study group according baseline characteristics

Baseline characteristics		Frequency	Percent
Age group	Less than 20 years	4	13.3
	21 – 30 years	16	53.3
	31 – 40 years	3	10.0
	41 – 50 years	3	10.0
	More than 60 years	1	3.3
Gender	Male	24	80.0
	Female	6	20.0
Time of presentation	Less than 6 hours	12	40.0
	6 – 24 hours	14	46.7
	More than 24 hours	4	13.3

This study had shown that, about 53.3% of the study subjects were males. About 46% of the patients presented 6 – 24 hours after belonged to 21 – 30 years of age group. About 80% of the patients onset of symptoms.

Table 2: Clinical characteristics of the study group

Clinical characteristics		Frequency	Percent
Symptoms	Pain in Right iliac fossa	28	93.3
	Anorexia	26	86.7
	Nausea/ Vomiting	24	80.0
	Fever	20	66.7
	Urinary frequency	4	13.3
	Constipation	2	6.7
Position of appendix	Diarrhoea	1	3.3
	Retrocaecal	18	60.0
	Ileal	1	3.3
	Pelvic	10	33.3
	Subcaecal	1	3.3

Pain was the most common symptom of the study group followed by Anorexia, Nausea/ Vomiting and fever. Retrocaecal appendix was the common finding during the operation followed by Pelvic position.

Table 3: Parameters of Alvarado score

Parameters of Alvarado score	Frequency	Percent
RIF Pain	28	93.3
Nausea / Vomiting	26	86.7
Anorexia	25	83.3
RIF tenderness	21	70.0
Rebound tenderness	24	80.0
Fever	19	63.3
Leucocytosis	15	63.3
Shift to left	14	46.7

The parameters of the Alvarado score had shown that RIF pain was present in 93.3% of the cases, Nausea / Vomiting in 86.7% of the cases, Anorexia in 83.3% of the cases, RIF tenderness in 70% of the cases, rebound tenderness in 80% of the cases and fever in 63.3% of the cases. Leucocytosis was present in 63.3% of the cases and Shift to left was present in 46.7% of the cases.

Table 4: Parameters of Tzanaki's score

Parameters of Tzanakis score	Positive no of patients	Percent
Presence of right lower abdominal tenderness	21	70.0
Presence of WBC count > 12000/mm ³ in blood	19	63.3
USG positive for appendicitis	26	86.7
Rebound tenderness	14	46.7

The parameters of the Tzanaki's score had shown that, right lower abdominal tenderness was present in 70% of the cases, presence of WBC count more than 12,000 / mm³ in 63.3% of the cases, rebound tenderness in 46.7% of the cases.

Table 5: Predictive accuracy of Alvarado score and Tzanaki's score

Predictive accuracy	Alvarado score	Tzanaki's score
Sensitivity	90.0%	95.7%
Specificity	80.0%	85.7%
Positive predictive value	90.0%	95.7%
Negative predictive value	80.0%	85.7%

The sensitivity for Alvarado scoring was 90%, specificity was 80%, positive predictive value was 90% and Negative predictive value was 90%. The Tzanaki's score had shown that, the sensitivity was 95.7%, specificity was 85.7%, positive predictive value was 95.7% and negative predictive value was 85.7%.

Discussion

Acute appendicitis is as important surgical problem in day today surgical practice. This study was mainly undertaken to test the efficacy of Tzanakis scoring in order to prevent negative appendicectomy. Most of the cases in this study belonged to 21 – 30 years of age group and were males. The literature available across the world also shows the same. About half of the patients presented 6 – 24 hours after onset of symptoms. Pain was the most common symptom of the study group followed by Anorexia, Nausea/ Vomiting and fever. Retrocaecal appendix was the common finding during the operation followed by Pelvic position. These findings were in line with the available literature. The sensitivity for Alvarado scoring was 90%, specificity was 80%, positive predictive value was 90% and Negative predictive value was 90%. The Tzanaki's score had shown that, the sensitivity was 95.7%, specificity was 85.7%, positive predictive value was 95.7% and negative predictive value was 85.7%. A study by Barath et al had shown a sensitivity of 50.57%, specificity of 92.3%, PPV of 97.7% and NPV of 21.8% [10]. Shashikala et al observed 79.62% of the sensitivity, 83.3% of specificity, 97.72% of PPV and 31.25% of NPV [11]. Kumar et al had observed a sensitivity of 85.49%, specificity of 71.49%, PPV of 98.8% and NPV of 31.90% [12]. Atreya et al had observed a sensitivity of 93.83%, specificity of 52.94%, PPV of 90.48% and NPV of 64.29% [13]. A study by Anupriya et al had noted that, the sensitivity of 65.52%, specificity of 100%, PPV of 100% and NPV of 17.78% for Tzanakis scoring.

Conclusion

This study had shown that, the Tzanakis score is good tool to diagnose the appendicitis due to easy of tabulation and use of ultrasonography, which no other scoring systems available today.

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