Alvarado Score for the Acute Appendicitis in a Provincial Hospital

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Objective: *To assess the accuracy of Alvarado Score in predicting acute appendicitis in Chachoengsao Hospital.*
Material and Method: *The prospective study involved 1,000 patients with suspected acute appendicitis. It was carried out between April 2008 and March 2010. The patients were given specific scores according to variables of Alvarado Scoring System. The signs, symptoms, laboratory values and pathology reports of each patient were collected and evaluated. The diagnosis was confirmed by operative findings and histopathological examination of specimens. The sensitivity, specificity, positive and negative predictive values and receiver operator characteristic (ROC) curves of each indicator were also calculated.*
Results: *Out of total 1,000 patients (407 males, 593 females), 838 underwent surgery (352 males, 486 females) and specimens of 715 patients (313 males, 402 females) were confirmed by histopathological examination, thus giving negative appendectomy rate of 14.7% (11.08% males, 17.28% females). The overall sensitivity of Alvarado Score was 87.41% and the specificity was 74.39%, while the positive predictive value was 83.7%. The area under the curve was 0.74.*
Conclusion: *Though the diagnosis of acute appendicitis remains mainly clinical evaluation, Alvarado Score can be recommended as a helpful tool for the admission criteria and further management in order to reduce unnecessary admission, morbidity and mortality, length of stay, and cost of treatment.*

Keywords: *Appendicitis, Appendectomy, Alvarado score*

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Acute appendicitis is the commonest surgical problem with lifetime prevalence, approximating 1 in 7[1]. Its incidence is 1.5-1.9/1,000 in male and female population[2]. The surgery for acute appendicitis is the most frequent operation. It is 10% of all emergency abdominal operations[3,4]. A negative appendectomy rate of 20-40% has been reported in the literature and many surgeons would accept rate of 30% as invitation[5]. Removing normal appendix is an economic burden on both patients and health resources. The misdiagnosis and the delay in surgery can lead to complications like perforation and finally, peritonitis[6]. Difficulty in diagnosis arises in very young, elderly patients and females of reproductive age because they usually have atypical presentation and many other conditions that present like appendicitis. The literature shows that 2 to7% of all adults on exploration have other diseases than acute appendicitis[7]. Early recognition of the condition and prompt operation have been the most important factors in reducing morbidity and possible mortality, length of stay, and cost of treatment. Attempts have been made to improve diagnostic accuracy but the results have been disappointing[8,9]. Both routine history and physical examination remain the most effective and practical diagnostic modalities[10]. In order to reduce the negative appendectomy rates, various scoring systems have been developed to support the diagnosis[11]. One such scoring system is Alvarado Score, which is based on sophisticated statistical analysis of symptoms, signs and laboratory data and is very easy to apply[12]. The purpose of this study is to evaluate the accuracy of Alvarado Score in predicting acute appendicitis in Chachoengsao Hospital.

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Material and Method

The investigation was performed as a prospective study. It was carried out between April 2008 and March 2010 in the Division of Surgery of Chachoengsao Hospital in Thailand. One thousand patients including in this study were those of any age group and both genders presenting to out-patient department and emergency department with symptoms of acute appendicitis. The patients presenting with

urological, gynecological and other surgical problems were excluded. Alvarado Score was evaluated for all patients presenting with right lower abdominal pain. The pro forma containing general information about the patient plus eight variables based on-Alvarado Scoring System (Table 1).

Sum of all scores were calculated for each patient and based on the scores, the patients were divided into three groups.

Group I with an aggregate score of 7-10 is called 'the urgency group'. These patients were prepared for appendectomy. Group II with an aggregate score of 5-6 is called 'the observation group'. These patients were kept under observation for 24 hours after admission with frequent re-evaluation and re-application of Alvarado Scoring System. The condition of some patients improved as shown by decreasing in score and therefore they were discharged with the suggestion that they should come back if symptoms persist or increase in intensity. The condition of some deterioration was shown by increasing in score. Once score became more than 7, the patients were operated. Group III with an aggregate score of 1-4 is called 'the discharge home group'. After initial symptomatic treatment, these patients were discharged. The diagnosis of acute appendicitis was confirmed by operative findings and histopathological examination of specimens. The sensitivity, specificity, positive predictive value, and negative predictive value of score were calculated in patients based on pathology results analysis. Additionally, receiver operator characteristic curves (ROC) were generated for all scores to graphically represent overall score performance. P-value less than 0.01 was considered significant. Finally, the reliability of Alvarado Scoring System was assessed by calculating negative appendectomy rate and positive predictive value. Odd ratio (OR) and 95% confidence interval (95% CI) for each Alvarado scoring in male and female by operation were compared.

Table 1. Alvarado score as an aid for diagnosing acute appendicitis

Characteristics	Score
3 symptoms	
Migration of pain to the RLQ	1
Nausea and vomiting	1
Anorexia	1
3 signs	
Tenderness in right iliac fossa	2
Rebound tenderness in right iliac fossa	1
Elevated temperature	1
2 laboratory finding	
Leukocytosis	2
Shift to the left of Neutrophils	1
Total	10

Interpretation of Alvarado Score was summarized as follows:
Score 1-4 very unlikely acute appendicitis
Score 5-6 probable acute appendicitis
Score 7-10 definitely acute appendicitis

Consent

This study was approved by the Review Ethic Committee on clinical investigation of Chachoengsao Hospital. The informed consent was obtained from all participating physicians, surgeons and all patients in this study.

Results

Overall, 1,000 patients were admitted with suspected acute appendicitis in Division of Surgery, Chachoengsao Hospital during the twenty-four-month period. The ages of patients ranged from 15 to 72 years with the majority in the first decade (37.8%), followed by the second decade (33.4%) (Table 2). Out of 1,000 patients, 407 (40.7%) were male and 593 (59.3%) were female. Clinically females were more susceptible than males with a female-male ratio of 1.46:1 (Table 3). The frequency distribution of the patients according to Alvarado Scoring System is given in Table 3.

Group I: We had 698 patients (69.8%) with Alvarado Score of 7 or more. There were 294 males (29.4%) and 404 females (40.4%). All were admitted and performed appendectomy. Operative findings and histopathological reports showed that 625 patients (89.54%) had inflamed appendix (perforation rate was 15.9%) and 73 patients (10.46%) had normal appendix.

Group II: There was 287 patients (28.7%) with a score of 5-6. All were admitted for observation and periodic re-evaluation. Among them, 110 were male (11.0%) and 177 were female (17.7%). One hundred forty seven patients (51.2%) with a score of 6 or less were discharged after 24 hours of observation. Only 140 patients (48.8%) had increased severity of symptoms with Alvarado Score 7 or more on re-evaluation within 24 hours, therefore, appendectomy was performed. Operative findings and histopathological reports confirmed that two of three patients had inflamed appendix and the remaining 35.7% patients had normal appendix.

Table 2. Frequency distribution of patients per age group (n = 1,000)

Age group (years)	Male No. of patients (%)	Female No. of patients (%)	Overall No. of patients (%)
≤ 20	168 (16.8)	210 (21.0)	378 (37.8)
21-40	121 (12.1)	213 (21.3)	334 (33.4)
41-60	85 (8.5)	112 (11.2)	197 (19.7)
> 60	33 (3.3)	58 (5.8)	91 (9.1)
Total	407 (40.7)	593 (59.3)	1,000 (100)

Table 3. Frequency distribution of patients per gender and score (n = 1,000)

Score	Male No. of patients (%)	Female No. of patients (%)	Overall No. of patients (%)
1	0 (0)	0 (0)	0 (0)
2	1 (0.1)	1 (0.1)	2 (0.2)
3	1 (0.1)	3 (0.3)	4 (0.4)
4	2 (0.2)	7 (0.7)	9 (0.9)
5	31 (3.1)	63 (6.3)	94 (9.4)
6	79 (7.9)	114 (11.4)	193 (19.3)
7	69 (6.9)	104 (10.4)	173 (17.3)
8	92 (9.2)	132 (13.2)	224 (22.4)
9	88 (8.8)	105 (10.5)	193 (19.3)
10	45 (4.5)	63 (6.3)	108 (10.8)
Total	407 (40.7)	593 (59.3)	1,000 (100)
Female:male	1.46:1		

Table 4. Application of score (n = 1,000)

Score	Male No. of patients (%)	Female No. of patients (%)	Overall No. of patients (%)
Surgery	352 (35.2)	486 (48.6)	838 (83.8)
Observation	50 (5.0)	97 (9.7)	147 (14.7)
Discharge	4 (0.4)	11 (1.1)	15 (1.5)

Group III: Fifteen patients (1.5%) had score of 1-4. Among them, four were male (0.4%) and 11 were female (1.1%). All of them were discharged after initial assessment and symptomatic treatment (Table 4).

In this study, after analyzing by cutting point of Alvarado Score, and categorizing according to eight criteria of Alvarado Score, it was found that all of the characteristics according to Alvarado Score System (migration of pain to the RLQ, nausea and vomiting, anorexia, tenderness in right iliac fossa, rebound tenderness in right iliac fossa, elevated temperature, leukocytosis and shift to the left of neutrophils) of the patients who had been performed appendectomy were higher than the patients who had not been. In addition, it was also found that the patients that the surgeon decided to have them operated because of acute appendicitis had mean scores 7.88 (SD 1.39) and the patients who had not been operated had mean scores 5.54 (SD 0.85) as shown in Table 5.

The frequency of symptoms, signs and laboratory findings in accordance with Alvarado score is shown in Table 6.

All the specimens of the 838 operated cases were sent to laboratory for histopathological examination. The reports showed the features of acute appendicitis in 715 cases (85.3%) but 123 patients (14.7%) did not have acute appendicitis. Out of 123 cases, there are 99 cases (11.83%) of acute gastroenteritis, seven ureteric calculi, five Ovarian Cyst, two Ectopic pregnancy, two CA colon, and eight cases with no pathology. In this series the negative appendectomy rate was 14.7% (Table 7).

In Group A, there were 698 patients and all of them underwent surgery. Among this group, 625 patients had acute appendicitis on clinical diagnosis, which was later confirmed on histopathology. However, 73 patients had a normal appendix with other diagnoses (Table 8). In Group B, there were 302 cases. All except 212 cases were admitted in the surgical ward after observation. The latter had to undergo surgery due to

Table 5. Alvarado score between operative and non-operative groups (n = 1,000)

Score	Operative (mean ± SD) n = 838	Non-operative (mean ± SD) n = 162
Symptoms		
Pain to RLQ	0.93 ± 0.26	0.78 ± 0.41
Nausea and vomiting	0.67 ± 0.47	0.46 ± 0.50
Anorexia	0.58 ± 0.49	0.33 ± 0.47
Signs		
Tenderness in RLQ	1.91 ± 0.39	1.65 ± 0.75
Rebound pain	0.62 ± 0.49	0.29 ± 0.45
Evaluation of T > 37.3	0.62 ± 0.49	0.27 ± 0.44
Laboratory		
Leukocyte	1.77 ± 0.64	1.23 ± 0.97
Shift to the left	0.78 ± 0.41	0.53 ± 0.50
Total scores	7.88 ± 1.39	5.54 ± 0.85

Table 6. Comparative alvarado score in males and females by operation

Score	Male (n = 407)		OR (95% CI)	p-value	Female (n = 593)		OR (95% CI)	p-value
	Operative n = 352	Non-operative n = 55			Operative n = 486	Non-operative n = 107		
Symptoms								
Pain to RLQ								
1	325	43	3.36 (1.48-7.53)	0.01	454	84	3.88 (2.08-7.24)	0.01
0	27	12			32	23		
Nausea and vomiting								
1	231	25	2.29 (1.24-4.23)	0.01	334	50	2.51 (1.60-3.92)	0.01
0	121	30			152	57		
Anorexia								
1	202	21	2.18 (1.17-4.07)	0.01	286	32	3.35 (2.09-5.40)	0.01
0	150	34			200	75		
Signs								
Tenderness in RLQ								
2	333	43	7.10 (2.72-18.51)	0.01	460	90	4.81 (2.21-10.44)	0.01
1	7	1	6.42 (0.59-162.43)	0.10	9	1	8.47 (0.89-199.13)	0.06
0	12	11			17	16		
Rebound pain								
1	217	21	2.60 (1.40-4.87)	0.01	300	26	5.02 (3.04-8.35)	0.01
0	135	34			186	81		
Evaluation of T > 37.3								
1	203	13	4.40 (2.19-8.97)	0.01	313	30	4.64 (2.86-7.56)	0.01
0	149	42			173	77		
Laboratory								
Leukocyte								
2	319	35	5.59 (2.71-11.49)	0.01	417	64	4.45 (2.71-7.30)	0.01
1	2	1	1.23 (.08-36.79)	1.0	6	0	-	
0	31	19			63	43		
Shift to the left								
1	289	31	3.55 (1.87-6.74)	0.01	366	55	2.88 (1.83-4.54)	0.01
0	63	24			120	52		

OR = odds ratio; 95% CI = 95% confidence interval

the increase in their scores. Ninety patients had acute appendicitis histopathologically. Overall, 838 patients were operated. Amongst these, 715 had been confirmed appendicitis and 123 had normal appendix, giving a negative appendectomy rate of 14.68%. Thus, the overall sensitivity of the Alvarado Score was 87.41% and the specificity was 74.39%, while the positive predictive value was 89.54% and accuracy was 83.2% (Table 8).

All patients with Alvarado Score 7 or more had acute appendicitis (Ranges from 74.3-96.84% specificity). On the other hand, sensitivity rate of Alvarado Score was 87.41% when low cut-off value of 7 or more was used (Table 9).

A ROC curve for scoring system of the patients is shown in Fig. 1. ROC curve analysis demonstrated more chances of acute appendicitis by increasing of Alvarado Score ($p = 0.01$). The best cut-off point for diagnosis of appendicitis was 3-7 score (Table 9). Sensitivity of tenderness in right iliac fossa was 87.41% for diagnosis of appendicitis.

Table 7. Post operative findings & histopathological examination (n = 838)

Findings	No. of patients	Percentage
Inflamed appendix	715	85.30
Acute appendicitis	553	66.00
Perforated appendix	111	13.20
Gangrenous appendix	51	6.10
Normal appendix	123	14.70
Acute gastroenteritis	99	11.83
Ureteric calculi	7	0.84
Ovarian cyst	5	0.60
Ectopic pregnancy	2	0.24
CA colon	2	0.24
No pathology found	8	0.95
Total	838	100

Discussion

The goal of the clinical decision process in the patients who have acute abdominal pain is to make a correct diagnosis in the most effective way. The proper diagnosis of the patients with suspicious acute appendicitis is based on the separation of the patients

Table 8. Diagnostic accuracy of Alvarado score

Groups	No. of patients	Confirmed appendicitis	Normal appendix
Gr.A (Alvarado score ≥ 7)	698	625 (true positive)	73 (false positive)
Gr.B (Alvarado score <7)	302	90 (false negative)	212 (true negative)
	Sensitivity = 87.41% Specificity = 74.39% Positive predictive value = 89.54% Negative predictive value = 70.20% Accuracy = 83.20%		

Table 9. Validity of Alvarado score for diagnosis of acute appendicitis (n = 1,000)

Cut-off value	True negative	False negative	True positive	False positive	Sensitivity	Specificity	Positive predictive value	Negative predictive value	Accuracy
≥ 2	0	162	715	123	44.58%	0.0%	71.50%	0.0%	71.50%
≥ 3	2	160	715	123	81.10%	1.60%	71.64%	100%	71.70%
≥ 4	6	156	715	123	82.09%	4.88%	71.93%	100%	72.10%
≥ 5	15	147	715	123	82.94%	9.26%	72.59%	100%	73.00%
≥ 6	77	134	683	106	83.59%	42.08%	76.66%	70.64%	76.00%
≥ 7	212	90	625	73	87.41%	74.39%	89.54%	70.20%	83.20%
≥ 8	234	241	474	51	66.29%	82.11%	90.29%	49.26%	70.80%
≥ 9	184	515	279	22	35.14%	89.32%	92.69%	26.32%	46.30%
10	276	616	99	9	13.85%	96.84%	91.67%	30.94%	37.50%

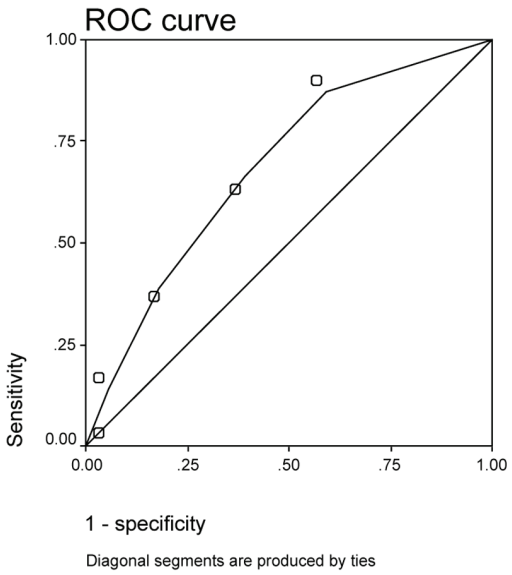

Fig. 1 ROC curve indicating accuracy of Alvarado score

with likely acute appendicitis that operation is warranted for them and those who may be closely observed or discharged. The diagnosis of acute appendicitis still represents one of the most difficult problems in surgery[13]. It has been a general surgical view for a long time that the removal of normal appendix is safer in questionable cases[14] and that delaying surgery for the purpose of increasing the diagnostic accuracy in patients with acute abdominal pain leads to the increasing rate of perforations[15]. However, such practice results in high rate of the removal of normal appendix that ranges from 15 to 30%[16]. On the other hand, extensive observation that results in perforated appendix may lead to the poor outcome that was avoidable.

This study reveals that acute appendicitis was the most common in the ≤ 20-year age group (37.8%). The second common group was 21-40 years (33.4%). Epidemiological studies have shown that appendicitis is more common in the 10-29 age group[11]. Early and accurate diagnosis of acute appendicitis is required to reduce the morbidity and possible mortality, length of stay, and cost of treatment associated with delayed diagnosis and its complication. In addition to significant morbidity, mortality, and negative appendectomy rate are also responsible for the loss of precious staff hours and financial resources. The goal of clinical decision process in the patients with acute abdominal pain is to make a correct diagnosis in the most effective way. However, the diagnosis may be delayed because of difficulties in the extreme of ages, non-specific early signs and symptoms, delay in seeking treatment or wrong initial diagnoses. Early abdominal pain may be vaguely localized to the epigastrium, which makes diagnose difficult. In addition to abdominal pain, most patients will have nausea, vomit, and anorexia. More than 90% of patients with appendicitis will have anorexia[17]. Right lower quadrant abdominal pain with involuntary guarding and migratory pain from the umbilicus to the right lower quadrant have been found to have the positive likely ratio of 8.4 and 3.1 respectively for appendicitis[18]. Different scoring systems have been used to diagnose appendicitis, one of which is Alvarado Scoring System. It is based on history, physical examination and a few laboratory tests. It is a simple, easy to apply and cheap complimentary aid for supporting the diagnosis of acute appendicitis. In this study, 838 patients were performed appendectomy. The negative appendectomy rate was 14.68%. It was comparable with the results of other studies which reported negative appendectomy rates of 14.3%[6], 15.6%[19], 16%[20], 16.1%[21] 16.21%[22] and 17.5%[23]. Besides, the negative appendectomy rate reported in the surgical literature varied from 8-32%[24]. However, the negative appendectomy was still found because specificity and sensitivity of Alvarado Score in this study was 74.39% and 87.41%. Therefore, the negative appendectomy can occur. Removal of normal appendix is inevitable to lower the rate of perforation and consequent mortality. On the other hand, unnecessary appendectomy carries long-term risks to the patients. Moreover, positive productive value of Alvarado Scoring System in the diagnosis of acute appendicitis in this study was 83.7%. It was comparable with the literature which reported a positive predicative value of 82.7%[25], 83.79%[22] 83.5%[19], 85.3%[26], 87.4%[27] and 87.5%[5]. Thus, this study showed that application of Alvarado Scoring System provided high degree of positive predictive value and high diagnostic accuracy. Moreover, the sensitivity was 87.41%, which was comparable with that of Lone et al (88%)[29]. The specificity of Alvarado Score in this study was 70.2%, collaborating well with that of Hizbullah and Jehangir (77.5%)[30]. The positive predictive value (83.7%) of this study was also similar to those studies in the literature[19,30]. In this study, the area under the curve, representing the overall performance for all possible cut points, was 0.73. In the study of Gwynn et al[31], the sensitivity and specificity of Alvarado Score were 91.6% and 84.7% respectively. He noted that the patients in extreme age groups were more likely to be

falsely diagnosed as appendicitis by Alvarado's prediction model.

However, the simplicity of the score for acute appendicitis is quite appealing. The idea of improving the diagnostic accuracy simply by assigning numeric values to defined signs and symptoms has been a goal in some of the scores described[32]. The parameters usually comprise the scores of the characteristics in Table 1. Such simple scoring systems may work as expected in the original setting, but they are not taken into consideration for different diagnostic weights of each parameter in different subpopulation (*e.g.* male, female, children, etc). Thus, scores do not usually repeat their good results when applied to different population, which leads to the creation of new scoring systems and their re-evaluation in different setting[11]. It is well known that ages and genders play an important role in the clinical presentation of acute abdominal pain. As much as 50% perforation rate has been reported in children and people over 75 years of age[5]. Moreover, 33% negative appendectomy rate was reported for females[33]. Evidently, any rigid scoring system that does not respect different significances of defined signs and symptoms within different subpopulations and geographical settings will not be as effective as Alvarado Score System when applied to the entire population in the emergency and out-patient department. In this analysis, all of the patients with Alvarado Score 7 or more were found to have acute appendicitis (Ranges from 74.39-96.84% specificity), and therefore could have proceeded to immediate surgery. This is a matter of particular importance, since the patients with perforated appendicitis had significantly longer time from the beginning of symptoms to the first presentation to the emergency and out-patient department. Therefore, Alvarado Score with cut-off values of 7 or more may be safely used to expedite appropriate surgical treatment in the patients with suspected acute appendicitis. However, no single score may be used alone to dictate or decline surgery. Different cut-off points may also be considered for different subpopulation.

Conclusion

The diagnosis of acute appendicitis depends on experience and clinical judgment. However, the delay of diagnosis definitely increases the morbidity, mortality, length of stay and cost of treatment. The diagnosis of acute appendicitis remains a challenging task for surgeons. This study shows that in the diagnosis of acute appendicitis by Alvarado Scoring System, it has a high diagnostic value (83.7%). Alvarado Scoring System is a non-invasive, safe diagnostic procedure that is simple, fast, cheap, reliable, and repeatable. It is applied purposefully and objectively in the patients of abdominal emergencies. The application of this scoring system improves diagnostic accuracy and consequently reduces negative appendectomy rate, and thus reduces complication rate. Moreover, Alvarado Score can be used as an objective criterion in screening patients with suspected appendicitis for admission.

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Potential conflicts of interest

None.

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การใช้ Alvarado score วินิจฉัยไส้ติ่งอักเสบเฉียบพลันในโรงพยาบาลจังหวัด

ชัยฤกษ์ ลิมปวัฒนศิริ

วัตถุประสงค์: *เพื่อประเมินความถูกต้องของ Alvarado score ในการวินิจฉัยภาวะไส้ติ่งอักเสบเฉียบพลันในโรงพยาบาลเมืองฉะเชิงเทรา*

วัสดุและวิธีการ: *ศึกษาไปข้างหน้าในผู้ป่วย 1,000 ราย ที่รับตัวเข้ารักษาในโรงพยาบาล ระหว่างเดือน เมษายน พ.ศ. 2551 ถึง เดือนมีนาคม พ.ศ. 2553 ด้วยอาการปวดท้องที่สงสัยภาวะไส้ติ่งอักเสบ โดยผู้ป่วยแต่ละรายจะได้รับการเก็บข้อมูล และคำนวณค่า Alvarado score ซึ่งค่า Alvarado score ที่มากกว่าหรือเท่ากับ 7 ถือเป็นผลบวก เปรียบเทียบกับผลจาก operative finding และผลตรวจทางพยาธิวิทยา และมีการวิเคราะห์ข้อมูลเพื่อหาความไว ความจำเพาะ และแนวโน้มการทำนายความถูกต้องของการวินิจฉัยโรคไส้ติ่งอักเสบเฉียบพลัน*

ผลการศึกษา: *ในจำนวนผู้ป่วยที่ศึกษาทั้งสิ้น 1,000 ราย (ผู้ชาย 407 ราย ผู้หญิง 593 ราย) ได้รับการวินิจฉัยเป็นภาวะไส้ติ่งอักเสบเฉียบพลัน 838 ราย (ผู้ชาย 352 ราย ผู้หญิง 486 ราย) และไม่ใช่ภาวะไส้ติ่งอักเสบเฉียบพลัน 123 ราย ในผู้ป่วยกลุ่มที่ได้รับการวินิจฉัยเป็นไส้ติ่งอักเสบเฉียบพลัน 715 ราย (ผู้ชาย 313 ราย ผู้หญิง 402 ราย) นั้นพบว่ามีอัตราการผ่าตัดไส้ติ่งปกติร้อยละ 14.7 (ผู้ชายร้อยละ 14.08 ผู้หญิงร้อยละ 17.28) ค่า Alvarado score ที่มากกว่าหรือเท่ากับ 7 มีความไวในการวินิจฉัยภาวะไส้ติ่งอักเสบฉับพลัน (sensitivity) ร้อยละ 87.41 และความจำเพาะในการวินิจฉัยภาวะไส้ติ่งอักเสบฉับพลัน (specificity) ร้อยละ 74.39 และค่า positive predictive value เท่ากับ 83.7% และพื้นที่ใต้ ROC curve เท่ากับ 0.74*

สรุป: *ถึงแม้ว่าการวินิจฉัยโรคไส้ติ่งอักเสบเฉียบพลันยังคงต้องใช้ข้อมูลหลักจากอาการทางคลินิกของผู้ป่วยเป็นสำคัญ อย่างไรก็ตาม Alvarado score เป็นเครื่องมืออย่างหนึ่งที่ช่วยในการวินิจฉัยภาวะไส้ติ่งอักเสบได้อย่างแม่นยำ สามารถนำไปใช้ในทางปฏิบัติได้จริง และใช้เป็นเกณฑ์ในการพิจารณารับผู้ป่วยไว้ในโรงพยาบาลเพื่อลดการ admit ผู้ป่วยโดยไม่จำเป็น ซึ่งนำไปสู่การลดจำนวนวันนอนโรงพยาบาลและลดต้นทุนค่ารักษาพยาบาลได้ในที่สุด*