ORIGINAL ARTICLE

Identification of complicated and non-complicated appendicitis: a new alvarado-based scoring system

Arife Polat Düzgün,[1] Hikmet Pehlevan Özel,[2] Eda Şahingöz,[1] Tolga Dinç[3]

[1]Department of General Surgery, Ankara City Hospital, Ankara-*Türkiye*
[2]Department of General Surgery, Mamak State Hospital, Ankara -*Türkiye*
[3]Department of General Surgey, University of Health Sciences, School of Medicine, Ankara City Hospital, Ankara -*Türkiye*

ABSTRACT

BACKGROUND: In the presence of non-complicated appendicitis, treatment typically involves a simple appendectomy and can even be managed medically. However, in cases of complicated appendicitis, surgery becomes more difficult, and the morbidity and mortality rates increase. This study aims to develop a method for recognizing complicated acute appendicitis operatively.

METHODS: This retrospective study developed a scoring system based on the Alvarado score. Several variables were scored in this new scoring system, including the Alvarado score, female gender, elevated direct bilirubin, increased appendicitis thickness, and the presence of complications as evidenced by imaging or appendicoliths.

RESULTS: The study included a total of 404 patients with a mean age of 38.50±12.94 years, all operated on for acute appendicitis. Of these, 45.8% were female. Complicated acute appendicitis was present in 25% of the patients. The presence of complicated acute appendicitis was identified with a sensitivity of 86.1% and a specificity of 90.4% in patients who scored 10.5 or above.

CONCLUSION: It is critical to identify perioperative and postoperative complications, provide appropriate patient counseling, and consider medical treatment when appropriate to diagnose acute complex appendicitis effectively. The new scoring system is an effective method for recognizing acute complicated appendicitis.

Keywords: Alvarado score; appendicitis; complications; scoring method.

INTRODUCTION

Acute appendicitis (AA) is a leading cause of acute abdominal pain that can progress to perforation and peritonitis, with a lifetime risk of 8.6% for men and 6.7% for women.[1] The occurrence of abscess, phlegmon, gangrenous-necrotizing, or perforated appendicitis is considered a complication and termed complicated acute appendicitis (CAA). Studies have demonstrated that medical treatment of non-complicated acute appendicitis (NCAA) is as safe and effective as appendectomy, but proving the presence of complications without surgery remains challenging.[2] Hence, the treatment of appendicitis remains primarily surgical. A simple appendectomy suffices in cases of NCAA, but the procedure becomes more complex with the development of CAA. Although numerous clinical parameter-based scoring systems exist for diagnosing acute appendicitis, the most well-known is the Alvarado score.[3] However, these scoring systems do not typically analyze the risk of complications.

In addition to elevated white blood cells and neutrophils, which are components of the Alvarado score, studies have indicated that hyperbilirubinemia and hyponatremia are also associated with AA. Furthermore, these factors are even effective in predicting complications.[4]

Ultrasonography (US) is the primary and most commonly

Cite this article as: Polat Düzgün A, Pehlevan Özel H, Şahingöz E, Dinç T. Identification of complicated and non-complicated appendicitis: a new alvarado-based scoring system. Ulus Travma Acil Cerrahi Derg 2024;30:101-106.

Address for correspondence: Arife Polat Düzgün
Department of General Surgery, Ankara City Hospital, Ankara, Türkiye
E-mail: apolatduzgun@yahoo.com

Ulus Travma Acil Cerrahi Derg 2024;30(2):101-106 DOI: 10.14744/tjtes.2024.70979
Submitted: 26.12.2023 Revised: 05.01.2024 Accepted: 12.01.2024 Published: 02.02.2024

used method in diagnosing acute appendicitis. Computed tomography (CT) is the second-line method used in cases of atypical findings or when US results are inconclusive.[5] If US findings are positive for AA, there is no need for further imaging. Imaging findings such as intramural air, extraluminal fecaloid, abscess, appendiceal wall defect, loss of stratification, or ileus appearance on US or CT indicate complicated acute appendicitis on imaging (CAA-i).[6]

The aim of this study is to improve the Alvarado score, the most widely utilized clinical scoring system for appendicitis, by integrating laboratory and imaging methods. This enhancement aims to differentiate between NCAA and CAA in the preoperative period. Additionally, the study seeks to identify patients who may be eligible for medical treatment.

MATERIALS AND METHODS

The study protocol was approved by the Local Ethics Committee (Approval No: E1-23-4015, Date: 12. 09. 2023). This retrospective study included patients who underwent surgery for AA in the General Surgery Clinic between January 1, 2020, and October 1, 2023. A total of 404 male and female patients, all over 18 years old, were included in the study. Patients with known hematologic diseases, renal and hepatic failure, or those who had an incidental appendectomy during surgery for another reason, were excluded. All patients underwent a detailed medical history assessment, complete blood count, detailed biochemistry analysis, and US. The Alvarado score was calculated for each patient.

Patients diagnosed with AA through the US did not undergo second-line imaging. However, CT imaging was performed when appendicitis was not visualized clearly or was unclear on US. Appendicitis characteristics such as thickness, compression response, presence of layers, lumen width, presence of appendicoliths, fluid or abscess, wall integrity, extraluminal fecaloid or air, and ileus status were evaluated by radiologists using US and CT when necessary. The presence of extraluminal air, periappendicular abscess or fluid, and irregular appendicitis wall were examined. Findings interpreted as perforated by the radiologist were considered indicative of CAA-i.

All patients underwent surgery for appendicitis, and specimens were collected for pathological examination. Patients were categorized into NCAA and CAA based on operative findings and histopathological results. The presence of intra-abdominal fecalitis, abscess, gangrenous-necrotizing appendicitis, or perforation was classified as CAA.

Statistical Package for the Social Sciences (SPSS) version 21.0 software (IBM Corp., Armonk, NY, USA) was used for statistical analysis. The Kolmogorov-Smirnov test was used to check the normality of the data. Numerical data with normal distribution were presented as mean and standard deviation, while numerical data with non-parametric distribution were presented as median (minimum-maximum). Categorical data were presented as frequency (percentage). The independent t-test was used for numerical data with normal distribution, the Mann-Whitney U-test for numerical data with non-parametric distribution, and the chi-square test for categorical data. Univariate and multivariate regression analyses were conducted on data significant in individual analyses. Receiver Operating Characteristic (ROC) curve analysis was performed on numerical data that were significant as a result of multivariate analyses, and cut-off values were determined. A scoring system was developed based on the results of these analyses.

RESULTS

The study included 404 patients, comprising 185 (45.8%) women and 219 (54.2%) men. According to the surgical and pathological results, 101 (25%) of these patients were classified as having CAA. The mean age of the patients was 38.50±12.94 years. Acute appendicitis was diagnosed in 214 (53%) patients using US. CT imaging was performed in 190 (47.0%) patients because appendicitis could not be visualized by US. The Alvarado score was calculated for all patients, with a mean of 7.64±1.51.

Age, gender, Alvarado score, biochemical parameters, and imaging results were analyzed. The statistically significant parameters differentiating CAA from NCAA are presented in Table 1.

Variables significant in differentiating CAA from NCAA, as shown in Table 1, were evaluated using univariate logistic regression analyses (Table 2). When appendicoliths or complications were detected on US or CT imaging, more than 95% of patients were found to have CAA (Table 1). Univariate logistic regression analysis revealed that complications were detected 198 times more often in the presence of appendicoliths and 133 times more often when interpreted as a complication on imaging (Table 2). Therefore, the presence of these two parameters was not included in the multivariate analyses and was considered as a full score in the scoring system. In the multivariate logistic regression analyses, female gender, high Alvarado score, elevated direct bilirubin levels, and increased appendicitis thicknesses were significantly associated with complicated appendicitis (Table 2).

Based on the results of the ROC curve analysis, the cut-off point for direct bilirubin was set at 0.25 mg/dL (area under the curve (AUC): 0.595, sensitivity: 50.5%, specificity: 62%, p=0.004), and for appendix thickness at 9.5 mm (AUC: 0.656, sensitivity: 74.3%, specificity: 43.9%, p<0.001).

As a result of the analysis, a new scoring system was developed, based on the Alvarado score. In addition to the Alvarado score, patients with a direct bilirubin level higher than 0.25 received 1 point, those with appendiceal thickness greater than 10 mm received 1 point, and female patients received 1 point. Patients were evaluated with a maximum score of 13 points. If appendicoliths were present on imaging and/or imaging diagnosed as CAA, the patient received a full score of 13 points (Table 3).

Table 1. Statistically significant parameters differentiating complicated appendicitis from non-complicated appendicitis

Variables	Non-Complicated Appendicitis (n=303)	Complicated Appendicitis (n=101)	p-value
Age, Mean±SD	37.47±12.09	41.58±14.85	0.006
Gender			
Female	129 (69.7%)	56 (30.3%)	0.028
Male	174 (79.5%)	45 (20.5%)	
Alvarado Score, Mean±SD	7.34±1.48	8.52±1.25	<0.001
Bilirubin, Total (mg/dL)	0.80 (0.10-5.20)	0.90 (0.20-4.20)	0.002
Bilirubin, Direct (mg/dL)	0.20 (0.10-1.10)	0.30 (0.10-1.20)	0.003
Sodium	139 (123-145)	139 (132-143)	0.012
Imaging Appendicitis Thickness (mm), Median (minimum-maximum)	10.0 (6.0-20.0)	11 (7.0-22.0)	<0.001
Imaging Results			
Acute Appendicitis	302 (81.2%)	70 (18.8%)	<0.001
Complicated Appendicitis	1 (3.1%)	31 (96.9%)	
Imaging Appendicolitis			
Absent	302 (83.2%)	61 (16.8%)	<0.001
Present	1 (2.4%)	40 (97.6%)	

Table 2. Univariate and multivariate logistic regression analyses

Variables	Univariate Analyses			Multivariate Analyses		
	OR	95% CI	p-value	OR	95% CI	p-value
Imaging Appendicolitis Presence*	198.033	26.713-1468.104	<0.001			
Imaging Complicated Appendicitis*	133.743	17.952-996.397	<0.001			
Alvarado Score	1.889	1.551-2.280	<0.001	1.714	1.404-2.092	<0.001
Imaging Appendicitis Thickness (mm)	1.256	1.148-1.375	<0.001	1.191	1.082-1.310	<0.001
Age	1.024	1.007-1.041	0.006			
Female Gender	1.679	1.066-2.642	0.025	2.018	1.191-3.418	0.009
Elevated Bilirubin, Total (0.1 unit increase)	1.053	1.015-1.092	0.006			
Elevated Bilirubin, Direct (0.1 unit increase)	1.223	1.075-1.392	0.002	1.211	1.041-1.410	0.013
Hyponatremia	0.896	0.815-0.986	0.024			

*Not included in multivariate analyses. CI: Confidence Interval; OR: Odds Ratio.

The ROC curve for CAA and NCAA using the Alvarado score showed an AUC of 0.725, with a 95% confidence interval (CI) of 0.669-0.781, p<0.001 (Fig. 1). The sensitivity and specificity for a cut-off value of 7.5 points in the Alvarado score were 80.2% and 53.8%, respectively. The positive predictive value was 36.6%, and the negative predictive value was 89.07% for a cut-off point of 7.5 points in the Alvarado score.

The ROC curve for CAA and NCAA, using the new scoring system, showed an AUC of 0.946 (95% CI=0.921-0.971, p<0.001) (Fig. 1). The sensitivity and specificity were 86.1% and 90.4%, respectively, for a cut-off value of 10.5 points. The

Table 3. New scoring system

Variables	Score
Alvarado Score	0-10 points
Bilirubin, Direct ≥ 0.25 mg/dL	1 point
Imaging Appendicitis Thickness ≥ 10 mm	1 point
Female Gender	1 point
Total	13 points

If appendicolitis was present on imaging and/or imaging diagnosed as complicated appendicitis, the patient received a full score of 13 points.

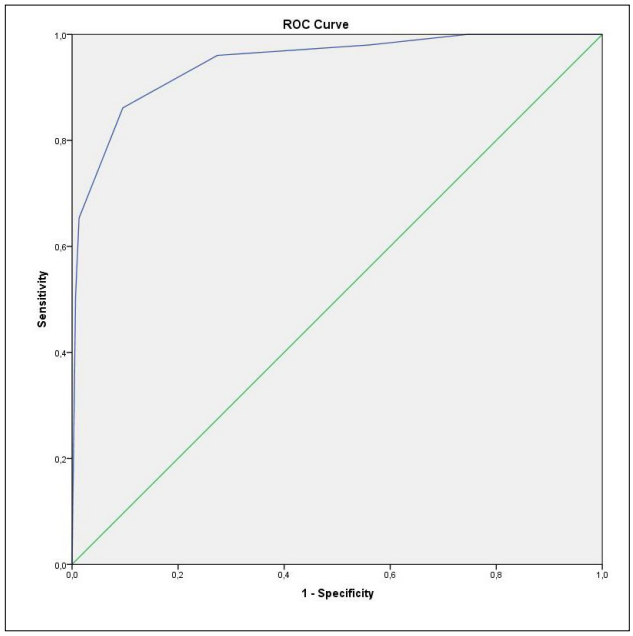

Figure 1. ROC curve analyses for the new scoring system.
Area Under the Curve=0.946, 95% Confidence Interval=0.921-0.971, p<0.001. Cut-off point=10.5 points (Sensitivity: 86.1%, Specificity: 90.4%).

positive predictive value was 75%, and the negative predictive value was 93.1% for a score of 10.5 points. For a score of 7.5 points, the sensitivity was 100%, and the specificity was 25.4%. Table 4 shows the results of the chi-square test for scores of 11 points and above, and the results for scores of 7 points and below, 8-10 points, and 11 points and above.

DISCUSSION

Acute appendicitis is the most common cause of abdominal pain in the community across all ages and genders.[1] If not properly treated, appendicitis can lead to ischemia, necrosis, gangrene, perforation, abscess, peritonitis, and subsequently sepsis and septic shock. These complications can affect other organs and blood systems, causing severe morbidity and mortality. The mortality and morbidity rates after appendectomy range from 0.07% to 0.7% and 10% to 19% for NCAA, and from 0.5% to 2.4% and 30% for CAA.[7] The most common post-appendectomy complications include surgical site infection, ileus, intra-abdominal abscess, fever, urinary infection, urinary retention, and other rare complications. The frequency of these complications increases in cases of CAA.[8] While NCAA can be treated surgically with a simple appendectomy, CAA may require more complicated surgeries ranging from simple appendectomy to right hemicolectomy. In CAA cases, the use of drains during surgery is required, the return of bowel movements to normal is often delayed postoperatively, long-term antibiotic use due to infection may be required, and the duration of hospital stays tends to be longer. Additionally, the transition back to normal life may take more time. Before surgery, identifying the possibility of CAA is important to inform the patient and to prepare the surgeon for potential challenges. However, antibiotic treatment in NCAA is a safe and successful strategy, with a 39% recurrence rate after five years.[1] Although antibiotic treatment is considered effective in different studies and guidelines, the key issue recently has been the ability to identify patients with NCAA. Numerous clinical scoring systems are used in diagnosing acute appendicitis, but there is no effective scoring system for evaluating complications. The aim of this study is to predict complications in preoperative AA based on the Alvarado score, one of the most widely used and studied scoring systems, combined with different laboratory and imaging methods.

The Alvarado score, defined in 1986, is one of the most effective clinical scoring systems for AA and has been the subject of more than 1,000 studies to date.[9] It is the most researched scoring system, reporting a sensitivity of 94.7% to 99%, a specificity of 94.4% to 100%, and a negative predictive value of 97.4% for patients with suspected appendicitis. It encompasses eight different clinical findings, totaling 10 points: migration of pain - 1 point, anorexia - 1 point, nausea - 1 point, tenderness in the right lower quadrant - 2 points, rebound pain - 1 point, elevated temperature - 1 point, leukocytosis - 2 points, and shift of white blood cell count to the left - 1 point.[10] In this study, the Alvarado score was determined for all patients diagnosed with AA, and it was found to be higher in CAA patients (p<0.001). The Alvarado score was used as the baseline in the newly designed scoring system.

Studies have shown that the incidence of acute appendicitis in

Table 4. New scoring system

	Non-Complicated Appendicitis	Complicated Appendicitis	p-value
Cut-off: 10.5 Points			
<11 Points	274 (95.1)	14 (4.9%)	<0.001
≥11 Points	29 (25%)	87 (75%)	
Cut-off: 7.5 Points and 10.5 Points			
0-7 Points	77 (100%)	0 (0%)	<0.001
8-10 Points	197 (93.4%)	14 (6.6%)	
≥11 Points	29 (25%)	87 (75%)	

cases of right lower quadrant pain is higher in men. However, women are more likely to have acute appendicitis, and the risk increases with age.[11] In this study, univariate analyses indicated that the risk of complications increased with age and was higher in women (p=0.006, p=0.028, respectively). Multivariate analyses revealed that being female increased the risk of CAA (Odds Ratio [OR]: 2.018 (1.191-3.418), p=0.009), and female gender was assigned 1 point in the scoring system.

Hyperbilirubinemia has been shown to develop in advanced stages of acute appendicitis, particularly after necrosis, gangrene, and perforation. This is attributed to the release of bilirubin from the bile ducts under the effects of bacterial endotoxins entering the bloodstream. An increase in bilirubin levels has been correlated with CAA.[4,12] Hyponatremia, an electrolyte disorder seen in serious diseases, is thought to be caused by an early systemic inflammatory response mediated by interleukin-6 and vasopressin. Studies have shown its association with CAA.[4,13] In this study, a significant relationship was found between increased total and direct bilirubin levels, decreased sodium values, and CAA (p=0.002, p=0,003, p=0,012, respectively). After multivariate analysis, it was determined that only an increase in direct bilirubin was associated with CAA (OR: 1.211 (1.041-1.410), p=0.013). The ROC curve analysis for direct bilirubin determined the cut-off value as 0.25 mg/dL. Therefore, direct bilirubin values of 0.25 mg/dL and above were assigned 1 point.

In a study published in 2021, Hoffman et al. categorized acute appendicitis into five groups based on ultrasonography and tomography findings: Type 0: normal, Type X: not visualized, Type 1: uncomplicated, Type 2: complicated without perforation, and Type 3: complicated with perforation.[6] Additionally, the presence of fecal impaction was associated with complications. Other factors associated with complicated appendicitis included loss of stratification on imaging, presence of intramural air, abdominal abscess, appendiceal wall defect, extraluminal fecal impaction, and ileus.[6] The use of US as the first-line imaging method in diagnosing appendicitis is cost-effective and diagnostically sufficient. However, in cases where the appendix cannot be visualized with US or the diagnosis is uncertain, a second-line evaluation with CT is recommended.[14] In this study, complicated appendicitis was found in all patients except one, in whom imaging showed the presence of complications or appendicoliths. Consequently, patients with complications on imaging and appendicoliths were assigned a full score of 13 points in the scoring system. Additionally, the relationship between appendicitis thickness and complications was evaluated. It was observed that the risk of complications increased in cases where the appendicitis thickness was 10 mm or above, and this was assigned 1 point in the scoring system.

The new scoring system, based on the Alvarado score, had a sensitivity of 86.1% and a specificity of 90.4% in differentiating CAA from NCAA. In contrast, the Alvarado score alone had a sensitivity of 80.2% and a specificity of 53.8% for differentiating CAA from NCAA. Complications were better predicted by the new scoring system developed in this study.

A new scoring based on the Alvarado score was developed and evaluated using a 13-point scale as a result of the analyses. Patients scoring 10.5 points and above were identified as having CAA with a sensitivity of 86.1% and a specificity of 90.4%. Patients scoring 7 points or less were shown to have NCAA with 100% sensitivity and 25.4% specificity.

CONCLUSION

Appendicitis is one of the most common surgical emergencies among patients presenting with abdominal pain to emergency departments. When CAA develops, the rate of postoperative morbidity increases, the scope of the surgery may extend from a simple appendectomy to more complicated procedures, and the patient's return to normal life after surgery can be prolonged. However, recent developments have shown that it can be treated with non-surgical therapies. The main problem in this area is differentiating complicated from uncomplicated appendicitis without resorting to surgery. In this study, we aimed to identify complicated appendicitis by developing a new scoring system based on the widely-used Alvarado score. With our new scoring method, we are able to detect complicated appendicitis with high sensitivity and specificity. This scoring system enables the detection of complications in the preoperative evaluation of appendicitis. By using this method, patients are better informed about possible difficulties, allowing surgeons to be better prepared for both perioperative and postoperative complications. If deemed appropriate, patients can be referred to medical treatment. However, further evaluation in larger patient groups is recommended.

Ethics Committee Approval: This study was approved by the Ankara Bilkent City Hospital Ethics Committee (Date: 12.09.2023, Decision No: E1-23-4015).

Peer-review: Externally peer-reviewed.

Authorship Contributions: Concept: A.P.D., H.P.Ö.; Design: T.D., H.P.Ö.; Supervision: A.P.D., T.D.; Data collection and/or processing: E.Ş.; Analysis and/or interpretation: H.P.Ö., E.Ş.; Literature search: H.P.Ö., T.D.; Writing: H.P.Ö.; Critical review: T.D., A.P.D.

Conflict of Interest: None declared.

Financial Disclosure: The author declared that this study has received no financial support.

REFERENCES

1. Di Saverio S, Birindelli A, Kelly MD, Catena F, Weber DG, Sartelli M, et al. WSES Jerusalem guidelines for diagnosis and treatment of acute appendicitis. World J Emer Surg 2016;11:1–25. [CrossRef]
2. Atema JJ, van Rossem CC, Leeuwenburgh MM, Stoker J, Boermeester MA. Scoring system to distinguish uncomplicated from complicated acute appendicitis. J British Surg 2015;102:979–90. [CrossRef]
3. Bom WJ, Scheijmans JC, Salminen P, Boermeester MA. Diagnosis of uncomplicated and complicated appendicitis in adults. Scandinavian J Surg

2021;110:170–9. [CrossRef]
4. Shuaib A, Alhamdan N, Arian H, Sallam MA, Shuaib A. Hyperbilirubinemia and hyponatremia as predictors of complicated appendicitis. Med Sciences 2022;10:36. [CrossRef]
5. Barac Y, Agridag B, Ozkurt H. Retrospective evaluation of ileocolic artery and vein diameters according to body mass index in the diagnosis of acute appendicitis on multislice computerized tomography. The Medical Bulletin of Sisli Etfal Hosp 2021;55:18. [CrossRef]
6. Hoffmann JC, Trimborn CP, Hoffmann M, Schröder R, Förster S, Dirks K, et al. Classification of acute appendicitis (CAA): Treatment directed new classification based on imaging (ultrasound, computed tomography) and pathology. Int J Colorectal Disease 2021;36:2347–60. [CrossRef]
7. Sartelli M, Baiocchi GL, Di Saverio S, Ferrara F, Labricciosa FM, Ansaloni L, et al. Prospective observational study on acute appendicitis worldwide (POSAW). World J Emerg Surg 2018;13:1–10. [CrossRef]
8. Wu T, Yang Y, Wu Y, Lu L, Dong S. Complications after appendectomy in patients with treated appendicitis: Results from a retrospective study. Ann. Palliat. Med 2021;10:125462553. [CrossRef]
9. Abdella Bahta NN, Zeinert P, Rosenberg J, Fonnes S. The alvarado score is the most impactful diagnostic tool for appendicitis: a bibliometric analysis. J Surg Res 2023;291:557–66. [CrossRef]
10. Gupta S, Kolli VS, Da Costa K, Javed S, Ammar A, Rasheed A. A systematic review and meta-regression for validation of the Alvarado score as a tool for predicting acute appendicitis. Ann Med Surg (Lond) 2023;85:111–21. [CrossRef]
11. Eddama MM, Fragkos KC, Renshaw S, Aldridge M, Bough G, Bonthala L, et al. Logistic regression model to predict acute uncomplicated and complicated appendicitis. The Annals of The Royal College of Surgeons of England 2019;101:107–18. [CrossRef]
13. Sand M, Bechara FG, Holland-Letz T, Sand D, Mehnert G, Mann B. Diagnostic value of hyperbilirubinemia as a predictive factor for appendiceal perforation in acute appendicitis. The American J Surg 2009;198:193–8.
14. Messias B, Cubas I, Oliveira C, Hashimoto F, Mocchetti E, Ichinose T, et al. Usefulness of serum sodium levels as a novel marker for predicting acute appendicitis severity: a retrospective cohort study. BMC Surg 2023;23:312. [CrossRef]
15. Jennings R, Guo H, Goldin A, Wright DR. Cost-effectiveness of imaging protocols for suspected appendicitis. Pediatrics 2020;145:e20191352.

ORİJİNAL ÇALIŞMA - *ÖZ*

Komplike ve komplike olmayan apandisitin tanımlanması: Alvarado tabanlı yeni bir skorlama sistemik

Arife Polat Düzgün,[1] Hikmet Pehlevan Özel,[2] Eda Şahingöz,[1] Tolga Dinç[3]

[1]Ankara Şehir Hastanesi, Genel Cerrahi Kliniği, Ankara, Türkiye
[2]Mamak Devlet Hastanesi, Genel Cerrahi Kliniği, Ankara, Türkiye
[3]Sağlık Bilimleri Üniversitesi Tıp Fakültesi, Genel Cerrahi Anabilim Dalı, Ankara Şehir Hastanesi, Ankara, Türkiye

AMAÇ: Komplike olmayan apandisit varlığında tedavi standart appendektomi olmakla birlikte, uygunluk halinde medikal tedavi de uygulanabilir. Komplike apandisit varlığında ise cerrahi karmaşık bir hal alabilmekte, morbidite ve mortalite oranları artmaktadır. Bu çalışmanın amacı komplike akut apandisiti ameliyat öncesinde tanıyabilmektir.

GEREÇ VE YÖNTEM: Retrospektif olarak dizayn edilen bu çalışmada, Alvarado skoru temel alınarak yeni bir skorlama sistemi geliştirildi. Yeni skorlama sisteminde Alvarado skoru, kadın cinsiyet olması, yüksek direkt bilirubin varlığı, artmış apandisit kalınlığı ve görüntüleme ile komplikasyon veya apendekolit varlığı puanlandı.

BULGULAR: Akut apandisit nedeniyle ameliyat edilen, yaş ortalaması 38.50±12.94 yıl olan toplam 404 hasta çalışmaya dahil edildi. Hastaların %45.8'i kadındı. Hastaların %25'inde komplike akut apandisit vardı. Komplike akut apandisit varlığı, skoru 10.5 ve üzerinde olan hastalarda %86.1 duyarlılık ve %90.4 özgüllük ile gösterildi.

SONUÇ: Ameliyat öncesi dönemde, ameliyat sırasında ve sonrasında gelişebilecek komplikasyonları öngörebilmek, hastaya doğru bilgilerle uygun tavsiyelerde bulunmak ve uygun olduğunda medikal tedaviyi değerlendirmek için akut komplike apandisit tanısını koymak kritik öneme sahiptir. Yeni skorlama sistemi akut komplike apandisiti tanımak için etkili bir yöntemdir.

Anahtar sözcükler: Alvarado skoru; apandisit; komplikasyon; skorlama yöntemi.

Ulus Travma Acil Cerrahi Derg 2024;30(2):00-00 DOI: 10.14744/tjtes.2024.70979