

Untangling diagnostic confusion in internal abdominal hernias

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ABSTRACT

BACKGROUND: Internal hernias involve the herniation of intestines through mesenteric or peritoneal defects in the gastrointestinal system. Etiologically, they are generally classified as congenital or acquired. Internal hernias often present with non-specific symptoms. Despite the increased use of computed tomography (CT), discrepancies between imaging findings and diagnostic accuracy continue to pose challenges for clinicians. This study aims to compare the outcomes of patients presenting to the emergency department with abdominal pain and receiving a preliminary internal hernia diagnosis through CT, followed by laparotomy.

METHODS: Our research is a retrospective, observational, and descriptive study. It includes patients presenting to the emergency department with abdominal pain, who were provisionally diagnosed with internal hernia based on CT. Patient data recorded age, gender, CT-identified internal hernia type, surgery, diagnoses, hospitalization status, duration of hospital stay, bowel resection, mortality, and blood parameters. The Welch classification was used to categorize internal hernia types, with eight types examined.

RESULTS: Among 112 patients with a preliminary internal hernia diagnosis based on abdominal CT, the median age was 52 years. Of these, 46 were female and 66 were male. Among all patients, 87 were admitted to the hospital for observation and surgery, while 25 were discharged after emergency department. Paraduodenal hernias were the most common provisional diagnosis (48 cases). Among these patients, 45 were discharged after symptom relief and were advised for elective re-evaluation. The exact diagnosis for these patients remains unknown. Post-surgery, the diagnosis of internal hernia was confirmed in 32 cases. Among them, 15 were female and 17 were male, with a median age of 52. The median hospital stay for patients diagnosed with internal hernia was 5 days. Although acquired hernias exhibited higher resection and mortality rates, no statistically significant difference was found. Thirty-five cases received different diagnoses: 19 had brid ileus, five had volvulus, six had acute appendicitis, one had duodenal perforation, three had gynecological malignancies, and one had renal malignancy.

CONCLUSION: Although internal hernias are rare, early diagnosis and treatment are very important due to the high risk of death. The study findings indicate that increased CT utilization leads to earlier diagnosis and treatment, resulting in improved prognosis for patients. This study holds one of the largest case series in the literature. It provides a novel perspective by evaluating radiologically-diagnosed cases, confirming diagnoses post-surgery, and comparing conditions that mimic internal hernias, thereby making a valuable contribution to the literature.

Keywords: Acquired; computed tomography; congenital; internal hernia; prediagnosis.

INTRODUCTION

Internal hernias are intestinal herniations primarily associated with abnormal anatomical structures within the gastrointestinal system, particularly related to mesenteric or peritoneal

defects. Unlike abdominal wall hernias, these hernias occur by entering various peritoneal or mesenteric regions instead of the abdominal wall.^[1,2] Anatomical structures such as mesenteric vessels or mesenteric angles are potential weak points that play a role in the development of internal hernias.^[3] In-

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ternal hernias constitute approximately 5% of all intestinal obstructions and stand as a leading cause of intestinal ischemia.^[4] Etiologically, internal hernias are generally classified into two categories: Congenital or acquired. Congenital internal hernias arise from abnormalities that occur during embryonic development, whereas acquired internal hernias result from trauma, surgical procedures, or other pathological conditions. Particularly, gastric surgical procedures (such as Roux-en-Y gastric bypass, choledocojejunostomy, and gastrectomies) can increase susceptibility to internal hernias.^[5] The topographic classification developed by Welch and colleagues categorizes internal hernias into eight distinct groups based on different anatomical regions. This classification holds significant importance in understanding and diagnosing internal hernias within clinical practice.^[6]

Internal hernias often manifest with non-specific symptoms, and patients may experience intermittent stomach pain, nausea, and ischemic symptoms, alongside evident signs of obstruction. Due to the potential overlap with other causes of abdominal pain, diagnosing internal hernias can be challenging.^[1,3] While the widespread use of computed tomography (CT) has facilitated diagnosis, discrepancies between imaging findings and diagnostic accuracy remain problematic for clinicians.^[7-9] The current literature primarily consists of case reports and studies with limited sample sizes, thereby constraining our comprehensive understanding.^[10,11]

With this study, our aim was to compare the outcomes of patients presenting to the emergency department with abdominal pain and receiving a provisional internal hernia diagnosis through CT, followed by laparotomy. The results of this study could contribute to a better understanding and management of this rare yet significant clinical condition.

MATERIALS AND METHODS

Our study is a retrospective, observational, and descriptive research. We included patients presenting to the emergency department with abdominal pain who received a prediagnosis internal hernia diagnosis through CT. The study was conducted across two centers, both having one of the largest bed capacities in Europe. In a retrospective analysis, electronic data from the emergency department's system were reviewed for the past 2 years (May 01, 2021–May 01, 2023). The exploration of hospital electronic records commenced after obtaining ethical approval from the institutional review board. The study examined the outcomes of patients with a prediagnosis internal hernia diagnosis based on CT scans. As patient data, we recorded age, gender, internal hernia type determined by CT, whether surgery was performed, surgical diagnosis, hospitalization status, duration of hospital stay if applicable, bowel resection, mortality, and values of white blood cell count, neutrophils, neutrophil percentage, hemoglobin, platelets, lymphocytes, urea, and creatinine from blood parameters. Internal hernia types were categorized using the Welch classification, where internal hernias were investigated in eight

types: Right paraduodenal, left paraduodenal, Winslow, pericecal, sigmoid-related, transmesenteric, transomental, and suprapubic. If patients had no history of previous surgical procedures, abdominal infections, or trauma, internal hernias were classified as congenital. Cases with a history of abdominal surgery, trauma, or abdominal infections were grouped as acquired. In-hospital mortality was assessed.

In the Patient Selection for the Study

Inclusion criteria

The following criteria were included in the study:

- Presenting to the emergency department with abdominal pain
- Having a CT scan conducted on presentation
- Prediagnosis of internal hernia
- Being 18 years of age or older.

Exclusion criteria

The following criteria were excluded from the study:

- Patients below 18 years of age
- Patients for whom information in the study form could not be accessed.

Statistical Analysis

The statistical analysis of the research data was performed using the SPSS statistical software package. Descriptive findings in the statistical analysis section were presented for categorical variables as counts and percentages, and for continuous variables, the mean \pm standard deviation for normally distributed data and median (minimum and maximum) for non-normally distributed data. The normality of continuous variables was assessed using visual tools and analytical methods. Mann–Whitney U and Chi-square tests were employed for pairwise comparisons. A significance level of $P < 0.05$ was considered in the study.

RESULTS

The study was completed with a total of 112 patients following a system scan. The flowchart is illustrated in Figure 1.

I – Patients with Provisional Diagnosis of Internal Hernia Based on Abdominal CT

Among the 112 patients with a provisional diagnosis of internal hernia based on abdominal CT results, the median age was found to be 52 years. Of these, 46 were female and 66 were male.

Out of these patients, 64 were considered to have a provisional diagnosis of congenital internal hernia, while 48 were evaluated with a provisional diagnosis of acquired internal hernia.

The patients' CT-based provisional diagnoses were categorized according to the classification by Welch as Right Paraduodenal, Left Paraduodenal, Pericecal, Foramen of Winslow, Transmesenteric, Transomental, Sigmoid mesocolon, and Pelvic + supramesocolic (Table 1).

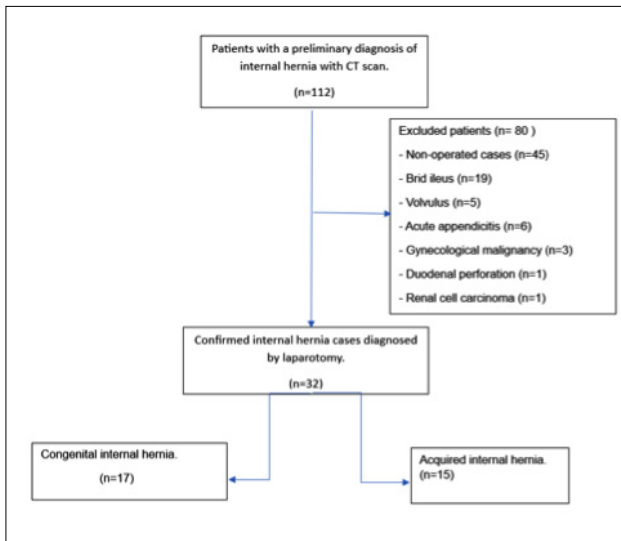


Figure 1. Flow diagram

Out of all patients, 87 were admitted to the hospital for observation and surgery, while 25 patients were discharged after emergency department monitoring. Among the provisional diagnoses, paraduodenal hernias were the most commonly considered with 48 cases (Table 1).

Out of these patients, a total of 45 were discharged for elective reevaluation under stable conditions after symptoms resolved during emergency department observation and hospitalization. The definitive diagnosis of these patients remains unknown.

In the classification based on the presumed etiology, patients classified as acquired had a higher rate of hospitalization ($P=0.031$). There was no statistically significant difference in the surgical rates among the groups based on etiology ($P=0.578$). Based on the etiology determined by the provisional diagnosis, a significantly higher rate of bowel resection was observed in the acquired group ($P=0.015$). In terms of mortality, patients presumed to have acquired internal hernias had a higher mortality rate ($P=0.039$) (Table 2).

Table 1. Prediagnosis of hernias based on computed tomography

Type of internal hernia	Incidence (n, %)
Right paraduodenal	22 (19.6)
Left paraduodenal	26 (23.2)
Foramen of Winslow	4 (3.5)
Pericaecal	25 (22.3)
Sigmoid mesocolon	22 (19.6)
Transmesenteric	6 (5.3)
Transomental	1 (0.8)
Pelvic + supramesocolic	6 (5.3)
Total	112

2 – Patients Undergoing Surgery

Out of the 112 patients with a provisional diagnosis of internal hernia based on abdominal CT, 67 patients underwent surgery. Among these 67 patients, the median age was 52 years. Of these, 28 were female and 39 were male.

Post-surgery, the diagnosis of internal hernia was confirmed in 32 patients, while the diagnosis was found to be different in 35 patients. Specifically, 19 patients were diagnosed with brid ileus, five with volvulus, six with appendicitis, one with duodenal perforation, three with gynecological malignancies, and one with renal malignancy. Among patients undergoing surgery with a provisional diagnosis of internal hernia, brid ileus was the condition most frequently mistaken for internal hernia (Table 3).

Patients with a provisional diagnosis of right paraduodenal hernia included five females and 17 males. Among them, nine underwent surgery, while 13 were followed up. Among those who underwent surgery, four were confirmed to have internal hernia, two had brid ileus, one had volvulus, one had appendicitis, and one had a diagnosis of gynecological malignancy. Of the internal hernias, two were congenital and two were acquired. Resection was performed in two cases. There

Table 2. Comparison of outcomes of groups based on etiology by prediagnosis

	Congenital	Acquired	P-value
Hospitalized	45	42	0.031*
Discharged	19	6	
Surgery	34	33	0.578
Non-surgery	30	15	
With resection	11	18	0.015*
Without resection	53	30	
With Mortality	1	5	0.039*
Without mortality	63	43	

Table 3. Outcome of patients with pre-diagnosis of internal hernia based on abdominal computed tomography result

Type of internal hernia	Clinical follow-up	Internal hernia	Brid ileus	Volvulus	Appendicitis	Perforation	Gynecological malignancy	Renal Malignancy	Total
Right paraduodenal	13	4	2	1	1	0	1	0	22
Left paraduodenal	9	8	6	1	1	0	0	1	26
Foramen of Winslow	1	1	1	0	1	0	0	0	4
Pericecal	9	10	3	1	2	0	0	0	25
Sigmoid mesocolon	9	3	5	2	0	1	2	0	22
Transmesenteric	2	3	1	0	0	0	0	0	6
Transomental	0	0	0	0	1	0	0	0	1
Pelvic + supramesocolic	2	3	1	0	0	0	0	0	6
Total	45	32	19	5	6	1	3	1	112

were no cases resulting in mortality (Table 3).

Patients with a provisional diagnosis of left paraduodenal hernia consisted of 10 females and 16 males. Among them, 17 underwent surgical procedures, and nine were followed up. Among those who underwent surgery, eight were confirmed to have internal hernia. Among the others, six had brid ileus, one had volvulus, one had appendicitis, and one had a malignancy diagnosis. Of the confirmed internal hernia cases, seven were males and one was female. Five cases were congenital, and three were acquired. Resection was performed in two cases. One case resulted in mortality.

Patients with a provisional diagnosis of Winslow hernia included one male and three female patients. Three patients underwent surgery, and one was followed up. Among those who underwent surgery, one was confirmed to have internal hernia, one had brid ileus, and one had appendicitis. The patient with a confirmed internal hernia diagnosis was classified as acquired and underwent resection. There were no cases of mortality (Table 3).

Patients with a provisional diagnosis of pericecal hernia included 13 females and 12 males. 16 patients underwent surgery. Among those who underwent surgery, 10 were confirmed to have internal hernia, three had brid ileus, one had volvulus, and two had appendicitis. Among the confirmed internal hernia cases, seven were females and three were males. Five cases were congenital, and five were acquired. Resection was performed in four cases. Two cases resulted in mortality (Table 3).

Patients with a provisional diagnosis of sigmoid hernia consisted of 13 males and nine females. Thirteen patients underwent surgery, and nine were followed up. Among those who underwent surgery, three were confirmed to have internal hernia, five had brid ileus, two had volvulus, one had perforation, and two had a diagnosis of gynecological malignancy. Among the confirmed internal hernia cases, two were females and one was male. Three cases were congenital hernias. Re-

section was performed in one case, and there were no cases resulting in mortality (Table 3).

Patients with a provisional diagnosis of transmesenteric hernia included four males and two females. Four patients underwent surgery, and two were followed up. Among those who underwent surgery, three were confirmed to have internal hernia, and one had brid ileus. Among the confirmed internal hernia cases, two were males and one was female. One case was congenital, and two were acquired. Resection was performed in two cases, and there were no cases resulting in mortality.

There was a single patient with a provisional diagnosis of transomental hernia who was female. The patient underwent surgery and was diagnosed with appendicitis. The patient was discharged in good health.

Patients with a provisional diagnosis of supramesocolic hernia consisted of three males and three females. Four patients underwent surgery, and two were followed up. Among those who underwent surgery, three were confirmed to have internal hernia, and one had brid ileus. Among the confirmed internal hernia cases, one was male and two were females. One case was congenital, and two were acquired. Resection was performed in one case, and there were no cases resulting in mortality (Table 3).

3 – Patients with Confirmed Diagnosis of Internal Hernia after Laparotomy

Out of the patients who underwent surgery, 32 were diagnosed with internal hernia. Among them, 15 were female, and 17 were male. The median age was 52 years. The median hospital stay for patients diagnosed with internal hernia was found to be 5 days.

According to the Welch classification among the internal hernia patients, four were diagnosed with right paraduodenal hernia, eight with left paraduodenal hernia, 10 with pericecal hernia, one with foramen of Winslow hernia, three with transmesenteric hernia, three with sigmoid mesocolon

Table 4. Prognosis of congenital and acquired hernias

Type of internal hernia	Congenital	Acquired	P-value
Resection			
Yes	6 (35.3)	7 (46.7%)	0.513
No	11 (64.7)	8 (53.3%)	
Mortality			
Yes	1 (5.9)	2 (13.3%)	0.471
No	16 (94.1)	13 (86.7%)	

hernia, and three with pelvic + supramesic hernia. There were no cases of transmesic hernia diagnosed among the internal hernia patients.

When comparing patients diagnosed with internal hernia after laparotomy with other patients, no statistically significant differences were observed in terms of age. The median age for patients diagnosed with internal hernia was 52 years, while for other patients, it was 51 years ($P=0.716$). In terms of gender distribution, among internal hernia cases, 15 were female and 17 were male, while in the other group, 13 were female and 22 were male. There was no statistically significant difference in gender distribution between the groups ($P=0.420$).

When examining blood parameters between the groups, including WBC, neutrophil-lymphocyte count and ratio, hemoglobin levels, platelet count, and other biochemical parameters, no differences were observed, and there was no statistical difference.

Looking at hospital stay duration, patients with a diagnosis of internal hernia had a median duration of 5 days, while the median duration for the other group was also 5 days. There was no statistically significant difference in terms of hospital stay duration ($P=0.432$).

Congenital and acquired hernias were examined in terms of resection procedures and mortality. Despite higher resection rates and mortality in acquired hernias, no statistical differences were found (Table 4).

The distribution of acquired and congenital hernias according to the Welch classification is shown in Table 5.

When comparing acquired and congenital patients among those diagnosed with internal hernia after laparotomy, no statistically significant differences were found in terms of age. The median age for congenital cases was 52 years, while for acquired cases, it was 50 years ($P=0.176$). In terms of gender distribution, there were seven females and 10 males among congenital cases, and among acquired cases, there were eight females and seven males. There was no statistically significant difference in gender distribution between the groups ($P=0.492$).

When examining blood parameters between the groups, including WBC, neutrophil-lymphocyte count and ratio, hemoglobin levels, platelet count, and other biochemical parameters, no differences were observed, and there was no statistical difference.

DISCUSSION

Internal hernias have been reported in a limited number of sources in the medical literature, and these are primarily studies involving a small number of case reports.^[11] Although internal hernias constitute only 1% of all cases of intestinal obstructions, early diagnosis and treatment are crucial due to the heightened risk of mortality. Our study boasts one of the largest case numbers in the literature.

In a study conducted by Ghiassi et al., which examined 49

Table 5. Distribution of acquired and congenital hernias according to Welch classification

Congenital hernias		Acquired hernias	
Right Paraduodenal	2	Right Paraduodenal	2
Left Paraduodenal	5	Left Paraduodenal	3
Foramen of Winslow	0	Foramen of Winslow	1
Pericecal	5	Pericecal	5
Sigmoid mesocolon	3	Sigmoid mesocolon	0
Transmesenteric	1	Transmesenteric	2
Pelvic + supramesic	1	Pelvic + supramesic	2

cases of internal hernia after roux-en Y surgery, one of the largest case series, only 16% of the patients had pre-operative CT scans, and none of them received a pre-operative internal hernia diagnosis. Publications highlighting the difficulty of diagnosing internal hernias by radiologists can be found in the literature,^[12,13] along with those emphasizing the necessity for radiologists to be familiar with diagnosing internal hernias.^[9,14]

Internal hernias are rare and it is usually one of the difficult-to-diagnose causes of obstruction. Despite the increasing use of CT, diagnostic challenges remain. Although diagnostic laparotomy is the gold standard for internal hernias,^[3,4,12] the recently updated literature argues that CT should be used routinely for suspected patients.^[8,9] In our study, we looked at the diagnostic accuracy of patients who we considered as a prediagnosis of internal hernia with CT.

Of the patients who received a prediagnosis of internal hernia based on radiological imaging, 45 were discharged for elective reevaluation after their symptoms resolved following clinical monitoring. Among the same group of patients, 32 underwent surgery and were confirmed to have an internal hernia diagnosis. Out of the patients who underwent surgery, 19 ended up with the most frequently confused differential diagnosis, which is a strangulated bowel obstruction known as brid ileus. Internal hernias can be mistaken for various differential diagnoses, most commonly brid ileus, on radiological imaging.^[7,9] This underscores the fact that surgeons should evaluate patients comprehensively through history, physical examination, laboratory tests, and radiological imaging. However, they should also bear in mind the limitations of radiological diagnosis.

Data in the literature suggest that acquired internal hernias have a worse prognosis compared to congenital ones.^[3,4] In our study, congenital and acquired hernias were examined in terms of resection procedures and mortality. Among patients suspected of having internal hernias based on CT results, differences were found in terms of resection and mortality rates between the acquired and congenital subgroups. However, among patients where the diagnosis of internal hernia was confirmed after surgery, although acquired hernias exhibited higher rates of resection and mortality, no statistical difference was observed.

The subtype ratios in our study differ from those in other studies based on the WELCH classification.^[1,13] We believe that this discrepancy is due to the fact that other studies are based on more limited case series.

Paraduodenal hernias are the most common type of internal hernias, constituting over half of all cases. They occur due to the entrapment of the small intestine within the colonic mesentery and can be observed on the right side as well, although they are more frequent on the left side.^[13] In our study, we also observed a higher prevalence of left-sided cases compared to right-sided cases. However, in our study, the ratio of confirmed internal hernia cases to all hernias remained at

37%. In conclusion, diagnosing paraduodenal hernias continues to pose challenges. Timely identification and reduction of symptomatic or asymptomatic paraduodenal hernias are essential, as untreated cases can progress to acute small bowel obstruction, ischemia, and bowel perforation.^[10] The technological advantages of radiology should be explored early in such cases. Thus, a rapid surgical intervention prevents the high morbidity and mortality associated with paraduodenal hernia.

Martin et al. stated that pericecal hernias constitute about 13% of all internal hernias.^[13] It is known that pericecal hernias often mimic other causes of right iliac fossa pain, such as appendicitis, and can lead to mortality rates of up to 75%.^[14,15] In our study, the rate of confirmed pericecal hernias after surgery was found to be 31%. Among the patients who underwent surgery based on prediagnosis, six cases did not have pericecal hernias. Among them, three were diagnosed with brid ileus, one with volvulus, and two were correctly diagnosed with appendicitis. In our study, the mortality rate for pericecal hernia patients was determined to be 20%.

Transmesenteric hernias are protrusions that pass through the small bowel mesentery or the colonic mesocolon, constituting 4–8% of all internal hernias. Defects in the mesentery commonly occur in the pediatric population. In adults, most of the defects arise from surgically created openings, such as those resulting from roux-en-Y procedures, inflammation, or trauma. Another subset at risk comprises bariatric patients who undergo rapid weight loss. Clinically, transmesenteric hernias present with the most acute symptom onset among all age groups, and they carry the highest risk of strangulation among internal hernias. In our study, three of the patients were diagnosed with internal hernia. One of the cases is congenital and two of them are acquired. There was no patient resulting in mortality.

Transomental hernias constitute about 1–4% of all internal hernias, making them the rarest hernia type. Defects in the greater omentum are typically congenital, but they often remain asymptomatic until strangulation occurs, making diagnosis extremely challenging.^[16] In our study, only one patient with a prediagnosis of transomental hernia underwent surgery and was diagnosed with appendicitis. Therefore, there were no cases diagnosed with transomental hernia in our study.

Sigmoid mesocolon hernias constitute 6% of internal hernias. The variations of herniation can be both congenital and acquired.^[17] In our study, 13 patients with a pre-diagnosis of sigmoid hernia underwent surgical procedures, while 9 patients were followed up. Among the patients who underwent surgery, three were confirmed to have internal hernia, five had brid ileus, two had volvulus, one had perforation, and two had a diagnosis of gynecologic malignancy. Among the three patients with internal hernia, all were diagnosed with congenital hernias.

In the study conducted by Akyıldız et al., the mortality rate was reported as 36%, while in the study by Fan et al., the mortality rate was found to be 20%.^[3,4] Earlier studies have even reported mortality rates reaching up to 75%. However, in our study, in contrast to the literature, we observed a mortality rate of 9%. The main factors contributing to increased mortality in cases of bowel ischemia and obstruction are sepsis and bacteremia resulting from delayed surgery. While Akyıldız et al. reported the presence of patients who waited for more than 3 days for laparotomy,^[4] in our study, due to the widespread use of CT scans and the improvement in health-care standards, all patients undergoing surgery were operated on the same day. We believe that this approach contributed to the reduction in the mortality rate.

In our study, follow-up data after discharge for 45 patients is not available. Although it is one of the largest case series in the literature, it was one of our limitations due to the small size of the population and the nature of the retrospective study.

CONCLUSION

While internal hernias are a rare condition, early diagnosis and treatment are crucial due to the potential risks of bowel obstruction, strangulation, and notably, increased mortality risk. Our study has revealed that patients who benefit from the increasing use of CT scans tend to have a better prognosis due to the opportunity for earlier diagnosis and treatment. Our study boasts one of the largest case series in the literature. By evaluating patients with a pre-diagnosis of internal hernia through radiological imaging, confirming the diagnosis post-surgery, and comparing with other conditions that can mimic internal hernias, our study provides a unique perspective that we believe contributes to the literature. We hope that this study will make a contribution to the literature.

Ethics Committee Approval: This study was approved by the Ankara Etilik City Hospital Ethics Committee (Date: 12.07.2023, Decision No: AEŞH-EKI-2023-347).

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ysis and/or interpretation: M.Y.; Literature search: A.A.S., N.İ.İ.; Writing: A.A.S., N.İ.İ.; Critical review: A.A.S., M.Y.

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ORİJİNAL ÇALIŞMA - ÖZ

İnternal abdominal hernilerdeki tanı karışıklığının çözülmesi

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AMAÇ: İnternal herniler, gastrointestinal sistemin mezenterik veya peritoneal defektlerle ilişkilendirilen bağırsak herniasyonlarıdır. Etiyolojik olarak, internal herniler genellikle konjenital veya edinsel olarak iki kategoriye ayrılır. İnternal herniler genellikle nonspesifik semptomlarla başvururlar. Bilgisayarlı tomografinin yaygınlaşması ile tanısal zorluklar azalmış olsa da görüntüleme bulguları ile tanı doğruluğu arasında yaşanan uyumsuzluk klinisyenler için hala sorun olmaya devam etmektedir. Bu çalışma ile, acil servise karın ağrısı şikayetiyle başvuran ve bilgisayarlı tomografi (BT) ile internal herni ön tanısı alan hastaların laparotomi sonucu sonuçlarının karşılaştırılmasını amaçladık.

GEREÇ VE YÖNTEM: Araştırmamız retrospektif, gözlemsel ve tanımlayıcı bir çalışmadır. Araştırmamıza acil servise karın ağrısı ile başvuran, BT çekilerek internal herni ön tanısı alan hastalar dahil edilmiştir. Hasta verisi olarak: hastaların yaş, cinsiyet, BT ile belirlenen internal herni tipi, ameliyat olup olmadığı, ameliyat tanısı, hastane yatışının olup olmadığı, yatış olduysa kaç gün yattığı, bağırsak rezeksiyonu, mortalite ve kan parametreleri kaydedilmiştir. İnternal herni tipi için Welch sınıflaması kullanılmıştır.

BULGULAR: Abdomen BT sonucunda internal herni ön tanısına sahip olan 112 hastanın yaşlarının median değeri 52 yıl olarak bulundu (46 kadın, 66 erkek). Tüm hastalardan 87 tanesi takip ve operasyon için hastaneye yatırılırken 25 hasta acil servis takibi sonrasında taburcu edildi. Paraduodenal herniler 48 hasta ile en çok düşünülen ön tanı oldu. Bu hastalardan 45 tanesine acil servis ve klinik gözlem sonrasında şikayetlerinin geçmesi üzerine elektif şartlarda değerlendirilmek üzere taburcu edilmiştir. Bu hastaların kesin tanısı bilinmemektedir. 32 hastanın cerrahi sonrası tanısı internal herni olarak doğrulanmıştır. Bunlardan 15 tanesi kadın, 17 tanesi erkektir. Yaşlarının median değeri 52'dir. İnternal herni tanısı alan hastaların median hastane yatış gün sayısı 5 olarak bulunmuştur. Konjenital ve edinsel herniler, rezeksiyon işlemi ve mortalite açısından incelenmiştir. Edinsel hernilerde rezeksiyon oranı ve mortalite daha fazla olmasına rağmen istatistiksel fark bulunamamıştır. 35 hastanın ise tanısının farklı olduğu görülmüştür. 19 hasta brid ileus, 5 hasta volvulus, 6 hasta apandisit, 1 hasta duodenal perforasyon, 3 hasta jinekolojik malignite, 1 hasta renal malignite tanısı almıştır. **SONUÇ:** İnternal herniler nadir görülen bir durum olsa da mortalite riskinin fazla olması nedeniyle erken teşhis ve tedavi çok önemlidir. Çalışmamız sonucunda yaygınlaşan BT kullanımı ile daha erken tanı ve tedavi şansı yakalayan hastaların daha iyi bir prognoza sahip olduğu bulunmuştur. Çalışmamız literatürdeki en fazla vaka serisine sahip çalışmalardan biridir. Radyolojik görüntüleme ile ön tanısı internal herni olan hastaların değerlendirildiği, cerrahi sonrası tanının kesinleşmesi ve internal herni ile karışabilecek diğer durumların karşılaştırılması ile farklı bir bakış açısı yansıtan, bu sayede literatüre katkı sağlayacağını düşündüğümüz bir çalışmadır.

Anahtar sözcükler: İnternal herni; bilgisayarlı tomografi; edinsel; konjenital; öntanı.

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