

Evaluating emergency department visits for spontaneous and traumatic pneumomediastinum: a retrospective analysis

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ABSTRACT

BACKGROUND: Pneumomediastinum signifies the accumulation of air within the mediastinum. This condition can develop spontaneously or as a secondary condition due to trauma or iatrogenic causes. Although rare, it is part of a wide differential diagnosis scale due to its most common presenting symptoms: chest pain and shortness of breath.

METHODS: Our study is a retrospective, observational, and cohort investigation. It included patients who presented to the emergency department and were diagnosed with pneumomediastinum through computed tomography. The study evaluated patients' sociodemographic features, methods of presentation, chest tube insertion, other surgical procedures, outcomes, and patient dispositions. The primary outcome of the study focused on the results of traumatic and spontaneous pneumomediastinum: hospital admission, the necessity for thoracostomy tube insertion, requirement for surgical procedures, and mortality. The secondary aim was to determine the relationship between other clinical features and laboratory parameters and their impact on the outcomes.

RESULTS: The study comprised 67 cases. The average age of the cases was 44.89 ± 2.41 years. Of the cases, 67.2% (n=45) were male. In terms of development, 40.3% (n=27) of cases were classified as spontaneous, and 59.7% (n=40) were post-trauma pneumomediastinum diagnoses. Among symptoms, 50.7% (n=34) of patients experienced dyspnea, and 49.3% (n=33) presented with chest pain, while symptoms like cough, fever, nausea, vomiting, and swallowing difficulty were reported in varying proportions. Among the patients, 9.0% (n=6) had lung disease, 29.9% (n=20) had comorbidities, 3.0% (n=2) had a history of substance use, 14.9% (n=10) underwent thoracostomy tube insertion, and 20.9% (n=14) required surgical procedures. While 35.8% (n=24) of the patients were admitted to the intensive care unit, 13.4% (n=9) died. The mean total hospital stay was calculated as 8.68 ± 1.12 days. No statistically significant relationship was found between the development of pneumomediastinum and hospital admission ($p=0.507$).

CONCLUSION: Upon examining the causes of pneumomediastinum cases, it was observed that patients with a history of trauma required thoracostomy tube insertion and surgical intervention more frequently. However, when classified as spontaneous or traumatic, both groups exhibited similar clinical courses and outcomes. Both groups demonstrated favorable clinical outcomes.

Keywords: Pneumomediastinum; spontaneous; traumatic; emergency department.

INTRODUCTION

"Pneumomediastinum" is the term used to describe the presence of air in the mediastinum.^[1] This condition can develop

either as spontaneous or secondary (due to trauma or iatrogenic causes). In primary cases, even though there might be an underlying predisposing condition (such as smoking, asthma, pneumonia, etc.), they are termed spontaneous due

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to the manner in which they develop. Secondary pneumomediastinum, on the other hand, is generally described in the literature as trauma-induced, including iatrogenic pneumomediastinum, and is referred to as traumatic pneumomediastinum.^[2] The entry of air into the mediastinum occurs as a result of damage to mediastinal-associated structures (such as alveolar rupture) or traumas that disrupt the integrity of the wall. The mechanism most commonly implicated in spontaneous occurrences is the Macklin phenomenon.^[2]

Patients may present with symptoms such as shortness of breath, chest pain, difficulty swallowing, neck pain, odynophagia, etc.^[1] As part of the initial diagnostic approach, obtaining a chest X-ray is generally recommended.^[3] Chest X-rays yield accurate results in up to 90% of cases; however, a lung computed tomography (CT) scan is the most accurate test for definitive exclusion and diagnosis.^[4]

The reported prevalence of pneumomediastinum is approximately around 0.002%.^[2] The most common presenting symptoms are chest pain and shortness of breath. This renders pneumomediastinum a small component within a broad differential diagnosis spectrum. Therefore, although obtaining a CT scan might seem excessive, it can often preempt unnecessary hospitalization and healthcare expenditures for pneumomediastinum, which is typically considered a self-limiting benign clinical condition.

The presence of air in the mediastinum is generally perceived as secondary to an underlying cause and is evaluated more as a reflection of a clinical picture rather than an illness. Most cases of spontaneous pneumomediastinum follow a benign course, and even traumatic cases, while often associated with the severity of the trauma, generally tend to have a favorable prognosis. Treatment typically involves conservative monitoring and observation, with surgical intervention and treatment planned for fewer cases.^[5] Despite all this information, pneumomediastinum continues to be a feared condition due to its low prevalence. Additionally, concerns related to traumatic pneumomediastinum have diminished in the current literature, but the condition still remains a source of fear.^[6]

In our research, we aimed to investigate the emergency department presentations of definitively diagnosed spontaneous and traumatic pneumomediastinum. Our objectives included examining how patients presented, any accompanying pathologies, surgical interventions performed, length of hospital stays, and disease-related mortality rates. By doing so, we aimed to contribute to the understanding of the presentation, patient outcomes, and risk factors related to pneumomediastinum, in addition to existing data. We also sought to raise awareness among emergency department physicians regarding this condition.

MATERIALS AND METHODS

Our study is a retrospective, observational, and cohort study. After obtaining ethical approval, we initiated the

study to identify patients who presented to the emergency department between 01/02/2019 and 01/02/2022 and were diagnosed with pneumomediastinum via computed tomography. We aimed to include patients who sought emergency care within the specified dates and underwent thoracic CT scans, which contained the terms 'pneumomediastinum' or 'air in the mediastinum' in their radiology reports. Patients with missing data, those diagnosed with mediastinal lesions but not ultimately diagnosed with pneumomediastinum, and those under 18 years old were excluded from the study.

As patient data, we recorded age, gender, presenting complaints, presence of known lung diseases (such as asthma, Chronic Obstructive Pulmonary Disease (COPD), emphysema, etc.), presence of comorbidities (diabetes mellitus, hypertension, coronary artery disease, malignancy, etc.), the development of pneumomediastinum (spontaneous or traumatic), the presence of additional systemic trauma in patients presenting with trauma-related chest trauma, the need for hospital admission, and the length of stay for admitted patients. Other recorded factors included the application of a chest tube, surgical procedures performed apart from chest tube insertion, mortality, and blood parameters (pH, HCO₃, lactate, troponin I).

The presenting complaints included symptoms recorded in the patient's history. The development of pneumomediastinum was classified into traumatic and spontaneous categories. Patients with trauma exposure and those who developed iatrogenic pneumomediastinum as a result of procedures (such as endoscopy, central catheters, etc.) were included in the traumatic group. Patients without a history of trauma and without traumatic findings were considered to have spontaneous pneumomediastinum. Additional diseases included all conditions other than chronic lung diseases (such as hypertension, diabetes, etc.). In-hospital mortality was calculated.

The application of a chest tube was documented. Chest tubes were initially inserted by emergency medicine or chest surgery specialists based on urgency and were subsequently reviewed by chest surgeons. All surgical procedures performed during the patient's hospital stay were meticulously recorded as a requirement for surgical intervention.

Additional trauma, which encompassed injuries beyond pneumomediastinum such as external injuries, was recorded exclusively in the traumatic group. Among the blood parameters, pH, bicarbonate, and lactate were recorded for assessing mediastinal tamponade and the development of shock during the acute phase. Troponin I was recorded for myocardial damage that might occur due to mediastinal trauma and compression.

The primary endpoint of the study was to determine the outcomes in terms of hospital admission, chest tube insertion, need for surgical intervention, and mortality in both traumatic and spontaneous pneumomediastinum cases. The secondary endpoints aimed to establish the relationship between other clinical features and laboratory parameters with patient outcomes.

Statistical Analysis

Statistical analysis of the data was performed using Statistical Package For Social Sciences (SPSS) for Windows 22.0 software. Descriptive statistics, including mean, standard error, median, and Q25-Q75 (first and third quartiles), were calculated for continuous variables, while frequency and percentage were provided for categorical data. Normality assumptions were evaluated using the Kolmogorov-Smirnov and Shapiro-Wilk tests. For statistical significance, the chi-square and Fisher's exact tests were used to compare qualitative data, and the independent samples t-test and one-way Analysis of Variance (ANOVA) were employed for normally distributed quantitative data. The Mann-Whitney U test and Kruskal-Wallis test were used for non-normally distributed data in binary and multiple groups, respectively. The post-hoc Tukey test was used to evaluate significance in cases of group differences. Spearman and Pearson correlation analyses were used for analyzing relationships between continuous variables. A p-value of less than 0.05 was considered statistically significant.

RESULTS

Following a system survey, 74 cases had a preliminary diagnosis of pneumomediastinum. However, 7 patients were excluded due to missing data or not having a definitive diagnosis of pneumomediastinum, resulting in a completed study with a total of 67 cases aged 18 and above.

The average age of the cases was found to be 44.89 ± 2.41 years. According to the World Health Organization's age classification, 55.2% (n=37) of the cases were in the 18-45 age range, 26.9% (n=18) were in the 45-65 age range, 13.4% (n=9) were in the 65-80 age range, and 4.5% (n=3) were 80 years or older. 67.2% (n=45) of the cases were male. When evaluating the mode of development, 40.3% (n=27) were spontaneous, while 59.7% (n=40) occurred post-trauma.

In 50.7% (n=34) of the patients, dyspnea was present, while 49.3% (n=33) reported pronounced pain. Cough, fever, nausea, vomiting, and difficulty swallowing were reported at varying rates. Among the patients, 9.0% (n=6) had lung disease, 29.9% (n=20) had comorbidities, 3.0% (n=2) had a history of substance use, 14.9% (n=10) underwent chest tube insertion, and 20.9% (n=14) underwent surgery. Out of the 40 patients in the traumatic group, 37 had additional trauma.

Of the performed surgical procedures, 4.4% (n=3) were conducted by general surgery, 2.9% (n=2) by thoracic surgery, 2.9% (n=2) by otorhinolaryngology, 2.9% (n=2) by cardiovascular surgery, and 7.4% (n=5) by orthopedic clinics. Among these procedures, 8.9% (n=6) were directly related to pneumomediastinum treatment, while the remaining 11.9% (n=8) were associated with additional traumas. 35.8% (n=24) of the patients were admitted to the intensive care unit, and 13.4% (n=9) died.

Among the deceased patients, 2.9% (n=2) underwent surgery

due to additional traumas, and 1.4% (n=1) received chest tube insertion. All deceased patients in the trauma group had additional traumas. While only one patient had isolated thoracic trauma (multiple rib fractures and hemopneumothorax),

Table 1. Evaluation of sociodemographic characteristics and study parameters

	n	%
Sex		
Female	22	32.8
Male	45	67.2
Age	Total	
Mean±SE	44.89±2.41	100
18-45 years	37	55.2
45-65 years	18	26.9
65-80 years	9	13.4
Over 80 years	3	4.5
Mechanism		
Spontaneous	27	40.3
Traumatic	40	59.7
Presenting Complaint		
Dyspnea	34	50.7
Chest Pain	33	49.3
Cough	6	9.0
Fever	4	5.9
Nausea-Vomiting	2	3.0
Dysphagia	2	3.0
Lung Disease		
Yes	6	9.0
No	61	91.0
Comorbidity		
Yes	20	29.9
No	47	70.1
Chest Tube		
Yes	10	14.9
No	57	85.1
Surgical Procedure		
Yes	14	20.9
No	53	79.1
Hospitalization		
No	15	22.4
Ward Admission	28	41.8
Intensive Care Unit	24	35.8
Mortality		
Yes	9	13.4
No	58	86.6

SE: Standard Error.

Table 2. Comparison of sociodemographic characteristics and study parameters by onset type and hospitalization status

n (%)	Mechanism			Hospitalization			
	Spontaneous	Traumatic	P	No	Ward Admission	ICU	P
Sex							
Female	8 (36.4)	14 (63.6)	0.646	4 (18.2)	6 (27.3)	12 (54.5)	0.077
Male	19 (42.2)	26 (57.8)		11 (24.4)	22 (48.9)	12 (26.7)	
Age							
41 years and below	15 (42.9)	20 (57.1)	0.655	5 (14.3)	22 (62.9)	8 (22.9)	0.001
41 years and above	12 (37.5)	20 (62.5)		10 (31.3)	6 (18.8)	16 (50.0)	
Presenting Complaint							
Dyspnea	23 (67.6)	11 (32.4)	<0.001	8 (23.5)	11 (32.4)	15 (44.1)	0.242
Chest Pain	4 (12.1)	29 (87.9)		7 (21.2)	17 (51.5)	9 (27.3)	
Lung Disease							
Yes	5 (83.3)	1 (16.7)	0.024*	0 (0.0)	3 (50.0)	3 (50.0)	0.377
No	22 (36.1)	39 (63.9)		15 (24.6)	25 (41.0)	21 (34.4)	
Comorbidities							
Yes	11 (55.0)	9 (45.0)	0.110	3 (15.0)	5 (25.0)	12 (60.0)	0.026
No	16 (34.0)	31 (66.0)		12 (25.5)	23 (48.9)	12 (25.5)	
Chest Tube							
Yes	1 (10.0)	9 (90.0)	0.034	2 (20.0)	4 (40.0)	4 (40.0)	0.953
No	26 (45.6)	31 (54.4)		13 (22.8)	24 (42.1)	20 (35.1)	
Surgical Procedure							
Yes	1 (7.1)	13 (92.9)	0.004	0 (0.0)	4 (28.6)	10 (71.4)	0.004
No	26 (49.1)	27 (50.9)		15 (28.3)	24 (45.3)	14 (26.4)	
Mortality							
Yes	2 (22.2)	7 (77.8)	0.235	4 (44.4)	0 (0.0)	5 (55.6)	0.021
No	25 (43.1)	33 (56.9)		11 (19.0)	28 (48.3)	19 (32.8)	

The p-value was calculated using the Chi-Square analysis. *Fisher's Exact Test. ICU: Intensive Care Unit.

the other six had multiple systemic traumas. In the spontaneous pneumomediastinum group, one of the two deceased patients had end-stage pancreatic malignancy. The average total hospital stay duration was found to be 8.68 ± 1.12 days. Sociodemographic characteristics and study parameters are presented in Table 1.

The average age of the patients was 41, and this was categorized based on the median value. Due to the uneven distribution of cases according to the World Health Organization's age classification, a median value was utilized to enable a more parametric distribution for optimal assessment. Patients above the age of 41 had a higher rate of intensive care unit admissions compared to regular ward admissions ($p=0.001$). Pain complaints were more prevalent in cases caused by traumatic factors ($p<0.001$). Patients with comorbidities had a higher rate of intensive care unit (ICU) admission compared to regular ward admission ($p=0.026$). The probability of spontaneous occurrence was higher in patients with lung disease ($p=0.024$). In the presence of comorbidities, there was a

higher and statistically significant difference in the rate of ICU admissions ($p=0.026$). The rate of chest tube application was higher in cases of traumatic pneumomediastinum, while the rate of additional surgical procedures was lower in spontaneous cases ($p=0.009$). Among patients requiring ICU admission, the rate of additional surgical procedures was higher ($p=0.004$). For patients requiring regular ward admission, the death rate was found to be lower compared to other groups ($p=0.021$) (Table 2).

Patients above the age of 41 exhibited higher levels of lactate and troponin ($p=0.035$, $p=0.010$). In cases of spontaneous pneumomediastinum, patients were younger, while in traumatic pneumomediastinum cases, troponin levels were higher ($p=0.030$, $p<0.001$). Patients presenting with pain complaints were younger and had shorter hospital stays ($p=0.006$, $p=0.037$). The ages of patients admitted to regular wards were younger compared to those in the ICU ($p<0.001$). Patients requiring ICU admission had longer hospital stays compared to those admitted to regular wards ($p=0.022$). Patients

Table 3. Comparison of age, length of hospital stay, pH, HCO₃, lactate, and troponin values by sociodemographic characteristics and study parameters

Mean±SE	Age (years)	Hospital Stay (days)	pH	HCO ₃ (mEq/L)	Lactate (mmol/L)	Troponin (ng/mL) Median (25%-75%)
Sex						
Female	51.5±4.65	10.84±1.96	7.29±0.03	21.99±1.06	3.88±0.56	33.3 (12-33.3)
Male	41.66±2.69	7.54±1.35	7.32±0.01	20.66±0.66	2.83±0.23	33.3 (7-33.3)
P	0.145	0.421	0.755	0.603	0.105	0.609 ^b
Age						
41 years and below	28.68±1.18	8.43±1.53	7.33±0.01	20.64±0.66	2.68±0.13	33.3 (2-33.3)
41 years and above	62.62±2.21	9.02±1.69	7.30±0.02	21.59±0.94	3.72±0.48	33.3 (16.5-51)
P	<0.001	0.798	0.457	0.406	0.035	0.010 ^b
Mechanism						
Spontaneous	44.74±4.29	8.03±1.66	7.35±0.03	21.20±1.14	2.53±0.25	7 (2-33.3)
Traumatic	45.0±2.87	9.21±1.55	7.30±0.02	21.03±0.57	3.62±0.37	33.3 (33.3-33.3)
P	0.030	0.416	0.993	0.096	0.234	<0.001 ^b
Presenting Complaint						
Dyspnea	51.29±3.85	11.02±1.92	7.29±0.02	20.59±1.06	3.20±0.42	27.5 (7-33.3)
Chest Pain	38.30±2.44	6.34±1.02	7.34±0.01	21.62±0.33	3.16±0.25	33.3 (22-33.3)
P	0.006	0.037	0.181	0.362	0.932	0.473 ^b
Hospitalization						
No	49.93±5.24	-	7.29±0.04	20.81±1.02	3.82±0.57	33.3 (7-95)
Ward Admission	33.18±2.34	6.32±1.38	7.35±0.01	21.74±0.55	2.64±0.16	33.3 (2-33.3)
ICU	55.42±4.04	11.44±1.70	7.30±0.04	20.54±1.31	3.41±0.55	33.3 (13.5-33.6)
P	<0.001 ^a	0.022 ^a	0.231 ^a	0.630 ^a	0.152 ^a	0.151 ^c
Surgery						
Yes	44.28±4.09	9.92±2.05	7.34±0.01	22.01±0.65	3.04±0.30	33.3 (33.3-33.3)
No	45.05±2.87	8.22±1.35	7.31±0.02	20.85±0.69	3.21±0.30	33.3 (5-33.3)
P	0.898	0.508	0.362	0.411	0.781	0.128 ^b
Mortality						
Yes	61.0±5.59	4.80±2.15	7.16±0.09	18.23±2.54	5.18±0.91	33.3 (33.3-131)
No	42.39±2.51	9.09±1.21	7.34±0.01	21.54±0.51	2.87±0.22	33.3 (5-33.3)
P	0.008	0.265	<0.001	0.045	0.001	0.022 ^b

The p-values were calculated using the Independent Samples T-Test for parametric data. For non-parametric data, the following tests were used: ^aOne-way ANOVA test; ^bMann-Whitney U test; ^cKruskal-Wallis H test were used. ICU: Intensive Care Unit; SE: Standard Error; Q25-Q75: 1st and 3rd quartile values.

with comorbidities were older and had longer hospital stays ($p<0.001$, $p=0.031$). Deceased patients were older and had higher levels of lactate and troponin, but lower levels of pH and HCO₃ ($p=0.008$, $p=0.001$, $p=0.022$, $p<0.001$, $p=0.045$) (Table 3).

No statistically significant relationship was found between admission status and mode of occurrence ($p=0.507$). In cases of traumatic pneumomediastinum, four deceased patients were included in the non-admitted category as they died in the emergency department (Table 4).

DISCUSSION

Pneumomediastinum is a rare condition. In our study, we included patients diagnosed with pneumomediastinum (both traumatic and spontaneous) who presented to our hospital. Our research constitutes one of the largest series in the literature in terms of patient numbers.

When examining the distribution of age and gender, we observed that the gender distribution for cases classified as spontaneous and traumatic was similar to that reported in

Table 4. Relationship between hospitalization status and occurrence mode

Hospitalization	Traumatic, n (%)	Spontaneous, n (%)	P value
Intensive Care Unit	12 (32.4%)	10 (40.0%)	0.507
Ward Admission	18 (48.6%)	12 (48.0%)	
No	7 (18.9%)	3 (12.0%)	

Chi-Square Test; **p<0.01.

the literature, while the age distribution was found to be higher.^[7-8-9-10] We believe this could be related to the location of our study, as the hospital is the highest-level center in the province for patient admissions.

One of the outcomes from our research was that chest pain was more dominant in traumatic cases, while dyspnea was more predominant in spontaneous cases. Chest pain is a known common and critical issue in thoracic traumas, necessitating effective management. New modalities for pain control are being explored.^[9] While the literature often highlights chest pain as the predominant symptom in spontaneous pneumomediastinum, our study found dyspnea to be more prevalent.^[10-11] We speculate that this may be due to the higher average age observed in our study. Decreased lung reserve and cardiac capacity with advancing age might have contributed to dyspnea becoming the predominant symptom.^[12]

Underlying lung diseases are recognized as one of the risk factors for spontaneous pneumomediastinum. Our study revealed a higher incidence of lung disease in cases of spontaneous pneumomediastinum, aligning with findings reported in the literature.^[11] Additionally, although crack cocaine use has been identified as a risk factor for pneumomediastinum, a comparative analysis between groups could not be performed due to its detection in only two patients in the spontaneous group.^[13]

According to our study's results, cases of traumatic pneumomediastinum more frequently required surgical intervention and chest tubes. Despite these increased procedural needs, similar rates of hospital admissions, intensive care needs, and mortality were observed.

Among our findings, patients with traumatic cases exhibited higher ages and troponin levels. In older patients, higher levels of troponin and lactate, along with low pH and bicarbonate levels, were associated with increased mortality. These findings were independent of the mechanism of occurrence. Moreover, among deceased patients, all patients in the trauma group had additional trauma, whereas in the spontaneous group, one patient had end-stage pancreatic malignancy. The conclusion was that the mode of occurrence (traumatic or spontaneous) had no association with mortality. Similar findings were observed in the literature.^[5,14]

It was observed that patients presenting with dyspnea as the predominant symptom had a higher average age and longer

hospital stays compared to those presenting with chest pain. We noticed that the longer hospital stays associated with dyspnea were likely due to the higher average age of these patients.

When examining hospital admission status based on the mechanism of occurrence, no statistical difference was observed. However, in the traumatic group, four patients died in the emergency department and were recorded as non-admitted.

While this comparison and population may seem limited, we consider it important as it is one of the few studies comparing secondary pneumomediastinum with spontaneous pneumomediastinum. The results we obtained are similar in nature to those found by Sapmaz and colleagues, yet were derived from a broader population.^[14] One limitation of our study is the absence of data for discharged patients who may have sought care at another center. Another limitation is the retrospective nature of the study. The recording of patient admissions and parameters, such as predominant clinical symptoms, is physician-dependent and subjective, which we consider a limitation. Another limitation of our study is the lack of recorded data on the current clinical status of patients. Such information could be necessary for additional etiopathogenetic analyses, including factors like pneumonia, tooth extraction, etc.^[15-16]

CONCLUSION

In our examination of the causes of pneumomediastinum cases, we observed that patients with a history of trauma more frequently required chest tube and surgical intervention. However, when classified as either spontaneous or traumatic cases, both groups demonstrated a similar clinical course and outcome, with both presenting favorable clinical outcomes.

Ethics Committee Approval: This study was approved by the Ankara City Hospital Ethics Committee (Date: 13.04.2022, Decision No: E2-22-1675).

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REFERENCES

- Iteen AJ, Bianchi W, Sharman T. Pneumomediastinum. 2023 May 1. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-.
- Sahni S, Verma S, Grullon J, Esquire A, Patel P, Talwar A. Spontaneous pneumomediastinum: time for consensus. *N Am J Med Sci* 2013;5:460–4. [CrossRef]
- Zachariah S, Gharahbaghian L, Perera P, Joshi N. Spontaneous pneumomediastinum on bedside ultrasound: case report and review of the literature. *West J Emerg Med* 2015;16:321–4. [CrossRef]
- Okada M, Adachi H, Shibuya Y, Ishikawa S, Hamabe Y. Diagnosis and treatment of patients with spontaneous pneumomediastinum. *Respir Investig* 2014;52:36–40. [CrossRef]
- Banki F, Estrera AL, Harrison RG, Miller CC 3rd, Leake SS, Mitchell KG, et al. Pneumomediastinum: etiology and a guide to diagnosis and treatment. *Am J Surg* 2013;206:1001–6; discussion 1006. [CrossRef]
- Muckart DJJ, Hardcastle TC, Skinner DL. Pneumomediastinum and pneumopericardium following blunt thoracic trauma: much ado about nothing? *Eur J Trauma Emerg Surg* 2019;45:927–31. [CrossRef]
- Al-Mufarrej F, Badar J, Gharagzoolo F, Tempesta B, Strother E, Margolis M. Spontaneous pneumomediastinum: diagnostic and therapeutic interventions. *J Cardiothorac Surg* 2008;3:59. [CrossRef]
- Iyer VN, Joshi AY, Ryu JH. Spontaneous pneumomediastinum: analysis of 62 consecutive adult patients. *Mayo Clin Proc* 2009;84:417–21. [CrossRef]
- Matthees NG, Mankin JA, Trahan AM, Israr S, Jones MD, Damerworth JL, et al. Pneumomediastinum in blunt trauma: If aerodigestive injury is not seen on CT, invasive workup is not indicated. *Am J Surg* 2019;217:1047–50. [CrossRef]
- Chouliaras K, Bench E, Talving P, Strumwasser A, Benjamin E, Lam L, et al. Pneumomediastinum following blunt trauma: Worth an exhaustive workup? *J Trauma Acute Care Surg* 2015;79:188–92; discussion 192–3.
- Dönmez S, Erdem AB, Şener A, Altas F, Mutlu Rİ. Placebo-controlled randomized double-blind comparison of the analgesic efficacy of lidocaine spray and etofenamate spray in pain control of rib fractures. *Ulus Travma Acil Cerrahi Derg* 2023;29:929–34. [CrossRef]
- Kouritas VK, Papagiannopoulos K, Lazaridis G, Baka S, Mpoukovinas I, Karavasili V, et al. Pneumomediastinum. *J Thorac Dis* 2015;7:S44–9.
- Caceres M, Ali SZ, Braud R, Weiman D, Garrett HE Jr. Spontaneous pneumomediastinum: a comparative study and review of the literature. *Ann Thorac Surg* 2008;86:962–6. [CrossRef]
- Cho SJ, Stout-Delgado HW. Aging and Lung Disease. *Annual Rev Physiology* 2020;82:433–59. [CrossRef]
- Perna V, Vilà E, Guelbenzu JJ, Amat I. Pneumomediastinum: is this really a benign entity? When it can be considered as spontaneous? Our experience in 47 adult patients. *Eur J Cardiothorac Surg* 2010;37:573–5.
- Sapmaz E, Işık H, Doğan D, Kavaklı K, Çaylak H. A comparative study of pneumomediastinums based on clinical experience. *Ulus Travma Acil Cerrahi Derg* 2019;25:497–502. [CrossRef]
- Büyükkarabacak Y, Pirzirenli MG, Gurz S, Abacı H, Taslak Şengül A, Çelik B, et al. COVID-19 and pneumothorax, pneumomediastinum, subcutaneous emphysema: Analysis of risk factors. *Türk Gogus Kalp Damar Cerrahisi Derg* 2023;31:69–77. [CrossRef]
- Işık H, Sapmaz E, Özbek M, Çaylak H, Şengül İnan M. A rare cause of pneumomediastinum and subcutaneous emphysema: Tooth extraction. *Türk Gogus Kalp Damar Cerrahisi Derg* 2020;28:390–3. [CrossRef]

ORİJİNAL ÇALIŞMA - ÖZ

Spontan ve travmatik pnömomediastinum vakalarının acil servis ziyaretlerinin değerlendirilmesi: Retrospektif bir analiz

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AMAÇ: Pnömomediastinum, mediasten içinde hava birikimi durumunu ifade eder. Bu durum spontan veya ikincil (travma, iyatrojenik) nedenlere bağlı olarak gelişebilir. Nadir görülmekle birlikte en sık başvuru semptomları olan göğüs ağrısı ve nefes darlığı nedeniyle geniş bir ayırıcı tanı skalasının üyesidir.

GEREÇ VE YÖNTEM: Çalışmamız retrospektif, gözlemsel ve kohort bir araştırmadır. Araştırmamıza acil servise başvuran ve bilgisayarlı tomografi sonucu pnömomediastinum tanısı alan hastalar dahil edildi. Hastaların sosyodemografik özellikleri, başvuru şekilleri, göğüs tüpü ve diğer cerrahi işlemler, sonuçları ve hasta sonlanımları incelendi. Çalışmanın birincil sonuç noktası, travmatik ve spontan pnömomediastinum sonuçları; hastane yatışı, torakostomi tüp takma gerekliliği, cerrahi işlem gerekliliği ve mortalite olarak belirlendi. İkincil sonuç, diğer klinik özelliklerin ve laboratuvar parametrelerinin sonuçlarla ilişkisini belirlemeyi amaçladı.

BULGULAR: Çalışma, 67 olgu ile tamamlandı. Olguların yaş ortalaması 44.89±2.41 yıldır. Olguların %67.2'si (n=45) erkektir. Gelişme şekli göz önüne alındığında, olguların %40.3'ü (n=27) spontan, %59.7'si (n=40) travma sonrası pnömomediastinum tanısı almıştır. Semptomlar arasında hastaların %50.7'sinde (n=34) dispne ve %49.3'ünde (n=33) göğüs ağrısı bulunsa da öksürük, ateş, bulantı-kusma, yutma zorluğu gibi semptomlar da farklı oranlarda rapor edilmiştir. Hastaların %9'unda (n=6) akciğer hastalığı, %29.9'unda (n=20) ek hastalık, %3.0'unda (n=2) madde kullanımı öyküsü bulunurken, %14.9'unda (n=10) torakostomi tüp takılmış ve %20.9'unda (n=14) cerrahi işlem uygulanmıştır. Hastaların %35.8'i (n=24) yoğun bakım ünitesine yatırılmış ve %13.4'ü (n=9) hayatını kaybetmiştir. Ortalama toplam hastanede yatış süresi 8.68±1.12 gün olarak hesaplanmıştır. Pnömomediastinum gelişim şekli ile hastane yatışı arasında istatistiksel olarak anlamlı bir ilişki saptanmamıştır (p=0.507).

SONUÇ: Pnömomediastinum olgularının nedenlerini incelediğimizde, travma öyküsü bulunan hastaların torakostomi tüp takma ve cerrahi müdahale gereksinimi daha sık olduğunu gördük. Ancak spontan ve travmatik olgular olarak sınıflandırıldığında, her iki grup da benzer klinik seyir ve sonuçlar sergilemiştir. Her iki grup da olumlu klinik sonuçlar göstermiştir.

Anahtar sözcükler: Acil servis; pnömomediasten; spontan; travmatik.

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