

Clinical characteristics of four children with azygos lobe: A Case Report

Children with an azygos lobe

Yaşar Kandur¹, Mesut Melih Özercan², Nesimi Günel², Ayşegül Alpcan¹, Dilek Azkur¹¹ Department of Pediatrics, Faculty of Medicine, Kırıkkale University, Kırıkkale, Türkiye² Department of Thoracic Surgery, Faculty of Medicine, Kırıkkale University, Kırıkkale, Türkiye

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Abstract

Introduction: Normally, the azygos vein is localized in the posterior part of the upper lobe of the right lung. Still, during the process of embryogenesis, the azygos vein passes through the upper lobe of the lung. As a result of the parietal and visceral pleura being pulled together during this process, the azygos lobe is formed. The clinical features of the azygos lobe in children have not been summarized so far.

Case Presentation: This paper describes the presence of an azygos lobe in 4 pediatric patients presenting with cough and/or wheezing. Additionally, no pathological conditions such as bronchiectasis, pneumothorax, or neoplasm associated with the azygos lobe were observed in the evaluated patient series.

Conclusion: The azygos lobe does not require specific treatment unless it leads to clinically significant disease. However, to prevent misdiagnosis in radiological evaluations, clinicians should consider this anatomical variation.

Keywords

azygos lobe, children, allergy

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Corresponding Author: Dilek Azkur, Department of Pediatrics, Faculty of Medicine, Kırıkkale University, Kırıkkale, Türkiye.

E-mail: dilekazkur@gmail.com P: +90 318 357 42 42

Corresponding Author ORCID ID: <https://orcid.org/0000-0002-4396-9087>Other Authors ORCID ID: Yaşar Kandur, <https://orcid.org/0000-0002-8361-5558> · Mesut Melih Özercan, <https://orcid.org/0000-0001-9476-9328>Nesimi Günel, <https://orcid.org/0000-0003-2285-3883> · Ayşegül Alpcan, <https://orcid.org/0000-0001-9447-4263>

Introduction

The azygos lobe is a congenital variation of the lung, and its prevalence in the general population has been reported to be approximately 0.2–1.2%.¹ Normally, the azygos vein is located posteriorly in the upper lobe of the right lung; however, during the embryogenesis process, the azygos vein arch is displaced into the right lung and alters the normal relationship between the medial aspect of the right lung, located next to the azygos fissure, and the right side of the mediastinum.² The azygos lobe has been reported to resemble various pathological conditions, which can lead to misdiagnosis and incorrect treatment in adults, creating difficulties during thoracic surgeries. For example, an azygos lobe may be mistaken for a bulla, abscess, tumor, or localized pneumothorax.^{2,3}

While the clinical characteristics of the azygos lobe in adults are well defined, the clinical implications of this variation in children are more ambiguous, and systematic analyses are limited. This study presents the clinical features of four pediatric patients diagnosed with an azygos lobe at our clinic over the past five years.

Case Presentation

The demographic and clinical characteristics of the four patients with an azygos lobe are summarized in Table 1. Additionally, the postero-anterior chest X-rays are shown in Figure 1.

Ethical Approval

Written informed consent was obtained from the parents/legal guardians. Ethical committee approval was not required for case reports.

Reporting Guidelines

This case is reported in accordance with the CARE guidelines.

Discussion

In the early phases of fetal development, the right posterior cardinal vein, which eventually becomes the azygos vein, is positioned next to the apex of the right lung. Typically, this vein shifts above the lung and settles in the area between the right upper lobe and the main stem bronchi. However, in individuals with an azygos lobe, the vein extends into the right upper lobe, carrying with it four layers of pleura. As a result, a section of the

right upper lobe becomes enclosed between this new fissure and the mediastinum, forming what is known as the azygos lobe.⁴

The azygos lobe is usually discovered incidentally during a chest X-ray or thoracic CT scan, as seen in our patients. The azygos lobe tends to be asymptomatic and does not present with symptoms in most cases. However, in some instances, it may lead to misinterpretations and be mistaken for lung infections or other pulmonary pathologies.⁵

A review of the current literature reveals that the clinical features of the azygos lobe are mostly described in adult case reports. Some studies suggest that the azygos lobe is not predisposed to diseases. However, Ndiaye et al. have noted that if the fissure is deep enough to compress the bronchus draining the azygos lobe, it could lead to atelectasis or bronchiectasis.⁶

Limitations

This study has several limitations. First, it is a single-center, retrospective case series involving only four pediatric patients, which limits the generalizability of the findings. Second, the relatively short follow-up period and limited clinical data restrict the ability to assess long-term outcomes and potential complications associated with the azygos lobe in children. Further large-scale, prospective studies are needed to better understand the clinical significance of the azygos lobe in the pediatric population.

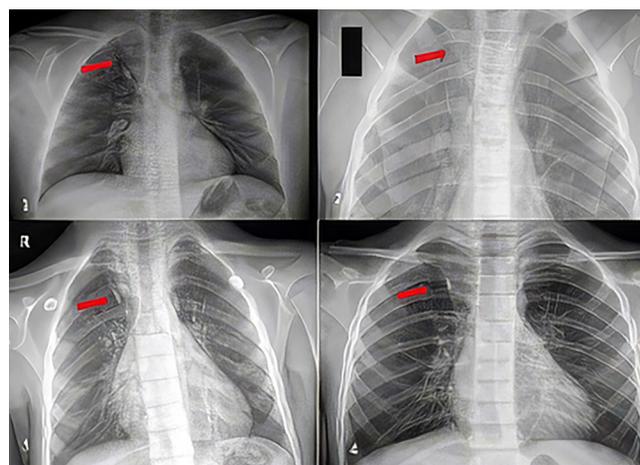


Figure 1. Chest X-rays of the patients (arrows indicate the azygos lobe)

Table 1. Demographic and clinical characteristics of the patients

	Case 1	Case 2	Case 3	Case 4
Age at diagnosis (years)	14	4	5	4
Gender	Male	Male	Male	Male
Complaint	Sneezing, runny nose, cough	Cough	Cough	Cough, wheezing
Symptom duration	8 years	3 years	20 days	2 years
Time of cough	Early in the morning	Night and day	Night and day	Night and day
Diagnosis	Allergic rhinitis	Pre-school wheezing	Acute bronchitis	Pre-school wheezing
Allergic sensitization	House dust mite and pollen	Not performed	Not performed	Mold
Comorbidity	Neurofibromatosis type 1	Adenoid hypertrophy	-	-
Treatment	Nasal steroid, cetirizine, montelukast	Inhaled corticosteroid + salbutamol	Inhaled salbutamol	Inhaled corticosteroid + salbutamol
Family history of atopic disease	+	+	+	+

Conclusion

The clinical features of the azygos lobe in children have not been well documented until now. In this study, it was incidentally identified in four pediatric patients with respiratory symptoms such as cough and wheezing, without any associated pathological conditions like bronchiectasis, pneumothorax, or neoplasm. Although the azygos lobe is a rare anatomical variant and typically asymptomatic, recognizing it is important to avoid radiological misinterpretation and unnecessary interventions. Greater awareness among clinicians, especially radiologists and surgeons, is essential, and further pediatric-focused research may help clarify its clinical relevance.

Ethical Declarations

Written informed consent was obtained from the parents/legal guardians. Ethical committee approval was not required for case reports.

Animal and Human Rights Statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed Consent

Written informed consent was obtained from the patient for publication of this case report. The patient's identity has been protected.

Data Availability

The datasets used and/or analyzed during the current study are not publicly available due to patient privacy reasons but are available from the corresponding author on reasonable request.

Conflict of interest

The authors declare that there is no conflict of interest.

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Author Contributions (CRediT Taxonomy)

Conceptualization: A.B.

Investigation: A.B., C.D.

Data Curation: A.B.

Writing – Original Draft Preparation: A.B.

Writing – Review & Editing: C.D., E.F.

Supervision: E.F.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content, including study design, data collection, analysis and interpretation, writing, and some of the main line, or all of the preparation and scientific review of the contents, and approval of the final version of the article.

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