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Clinical Image

Right-Sided Arcus Aorta (Rsaa) Syndrome

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ABSTRACT

Right-Sided Arcus Aorta (RSAA) syndrome was new defined in patients with chronic chough and exertional dyspnea. We aimed to present and discuss the new diagnostic findings of spirometry in cases with right sided arcus aorta is a syndrome. We retrospectively evaluated the patients whom diagnosed with right sided arcus aorta between 2007 and 2019.Totally 29 patients diagnosed RSAA and mean age was 45.6 years-old. Patient's age ranged from 4 to 86 years and the male to female ratio was 22/7. Twelve patients (41.4%) were symptomatic due to external compression of the trachea as a result of RSAA. The most common symptoms were dyspnea and chronic cough. Chest X-ray images showed the absence of the arcus aorta shadow on the left side of the mediastinum. The spirometric flow-volume curves during expiration and inspirations showed intra thoracic tracheal obstruction in 12(41.4%) of patients. We noticed the quadrilateral literalization pattern on flow-volume loops of spirometry. Due to tracheal compression from RSAA in patients with intra thoracic tracheal obstruction.

In conclusion, in this study, the RSAA syndrome is clearly identified. Also, it is more common than estimated and all patients with exertional dyspnea and chronic cough should be evaluated for the RSAA syndrome. And, the quadrilateral literalization pattern on flow-volume loops of spirometry and it is a new diagnostic finding in spirometry of patients with right sided arcus aorta is a syndrome.

INTRODUCTION

Right sided arcus aorta is a syndrome in which patients may show up with symptoms like exertional dyspnea and chronic cough. In previously reported articles, we have clearly demonstrated that the tracheal compression due to right sided arcus aorta with radiology and spirometry. It should be evaluated in especially patient with asthma-like symptoms including dyspnea and chronic cough [1,2]. In this article, we aimed to present and discuss the new diagnostic findings of spirometry in cases with right sided arcus aorta is a syndrome.

CASES AND METHODS

We retrospectively evaluated the patients whom diagnosed with right sided arcus aorta between 2007 and 2019. The clinical-radiological findings, treatments performed, treatment responses, and prognoses of patients diagnosed with eosinophilic lung diseases were retrospectively evaluated. The study was performed in accordance with the ethical principles in the Good Clinical Practice (GCP) guidelines, applicable local regulatory requirements, and the protocol was approved by local ethics review boards. All the patients read the patient information form about the study procedure and written informed consent was obtained. The characteristics of the patients are presented in (Table 1). Totally 31 patients diagnosed RSAA and mean age was 45.6 years-old. Patient's age ranged from 4 to 86 years and the male to female ratio was 24/7. Total 14 patients (45.1%) were symptomatic due to external compression of the trachea as a result of RSAA (Figures 2,4,6 and 7). The most common symptoms were dyspnea and chronic cough. Chest X-ray images showed the absence of the arcus aorta shadow on the left side of the mediastinum. The spirometric flow-volume curves during expiration and inspirations showed intra thoracic tracheal obstruction in 14(45.1%) of patients. We noticed the quadrilateral literalization pattern on flow-volume loops of spirometry .due to tracheal compression from RSAA in patients with intra thoracic tracheal obstruction (Figure 1,3,5 and 7). The diagnosis of RSAA was confirmed by thoracic CT and/or MRI in all patients.

Table 1: The characteristics of the patients.

Characteristics	N (%)
Total	31
Age/mean-years	45.6
Min-max years	4-86
Sex	
Male	24(77.4)
Female	7(22.6)
Symptoms	
Dyspnea	21(67.7)
Cough	12(38.7)
Exertional Dyspnea	5(16.1)
Dysphagia	2(6.4)
Spirometry	
Intrathoracic tracheal obstruction	14(45.1)
Normal	11(35.5)
Obstructive	4(12.9)
Restrictive	2(6.4)

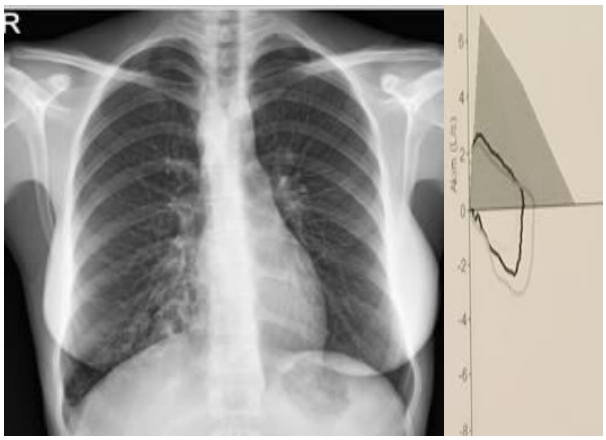

Figure 1: Chest radiography of 23 years-old female showing the right sided arcus aorta and flow-volume curves showing the quadrilateraliteralization pattern on spirometry.

Figure 2: Thoracic CT images showing the right sided arcus aorta and tracheal compression(patient in 1st Figure).

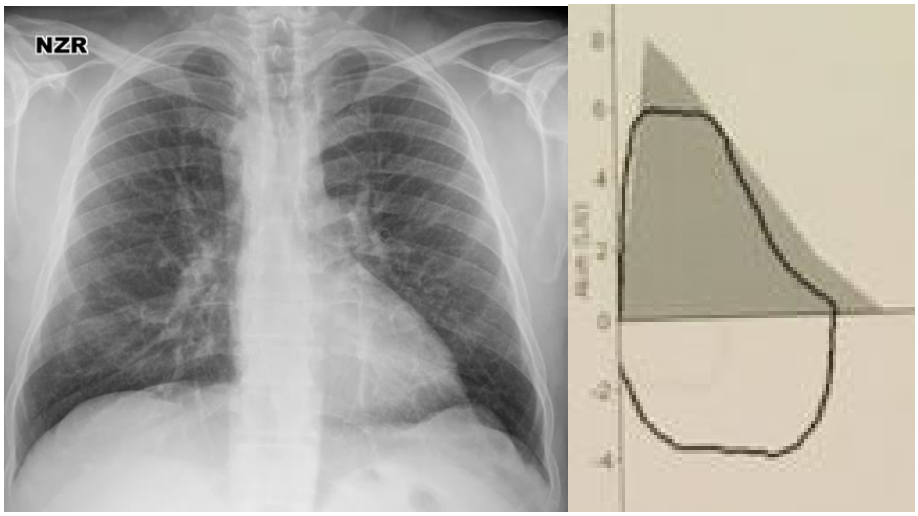

Figure 3: Chest radiography of 54 years-old male showing the right sided arcus aorta and flow-volume curves showing the quadrilateraliteralization pattern on spirometry.

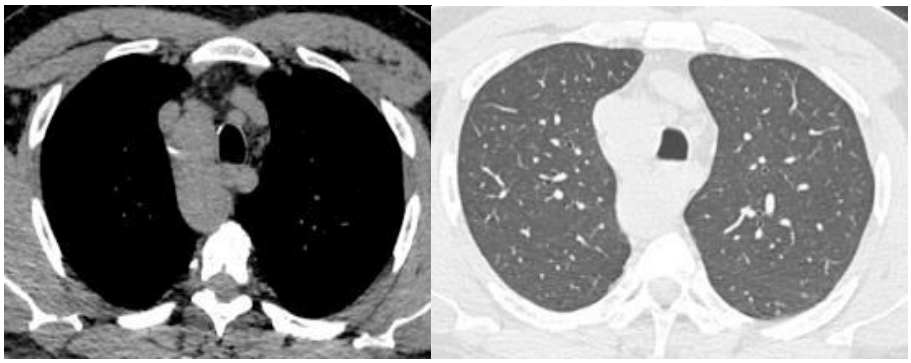

Figure 4: Thoracic CT images showing the right sided arcus aorta and tracheal compression (patient in 3rd figure).

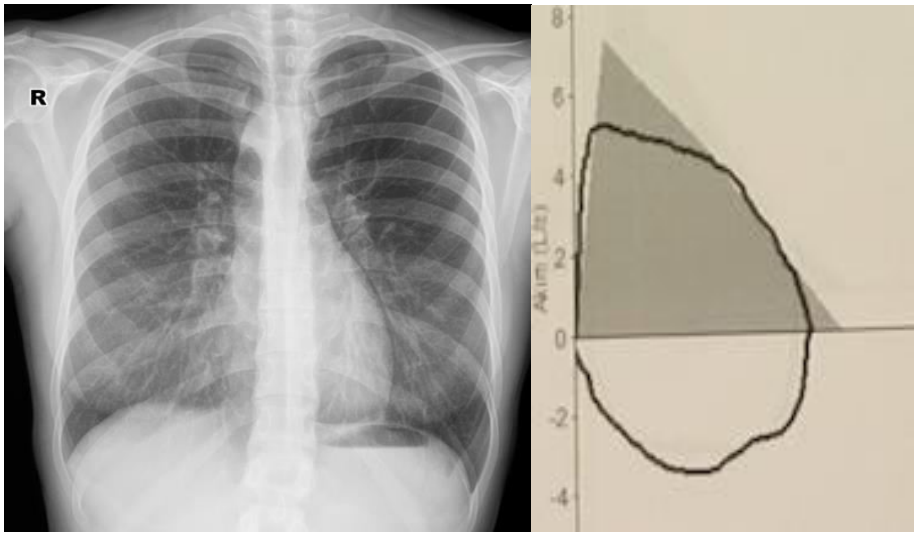

Figure 5: Chest radiography of 28years-old female showing the right sided arcus aorta and flow-volume curves showing the quadrilateraliteralization pattern on spirometry.

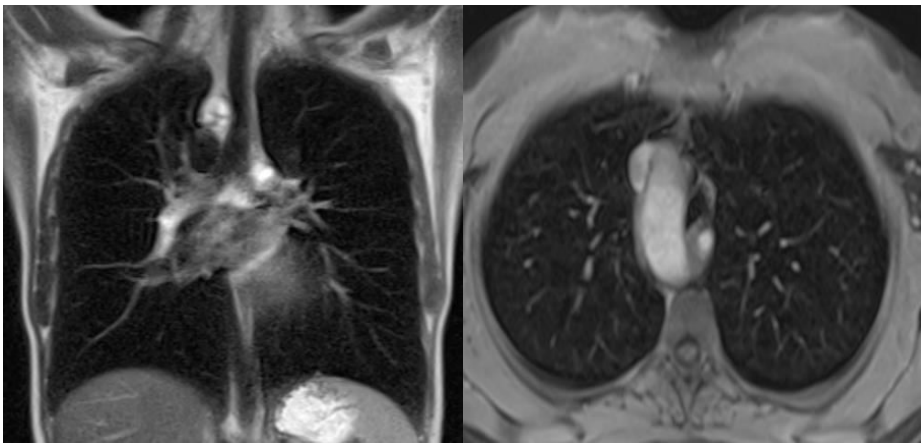

Figure 6: Thoracic MRI images showing the right sided arcus aorta and tracheal compression (patient in 5th figure).

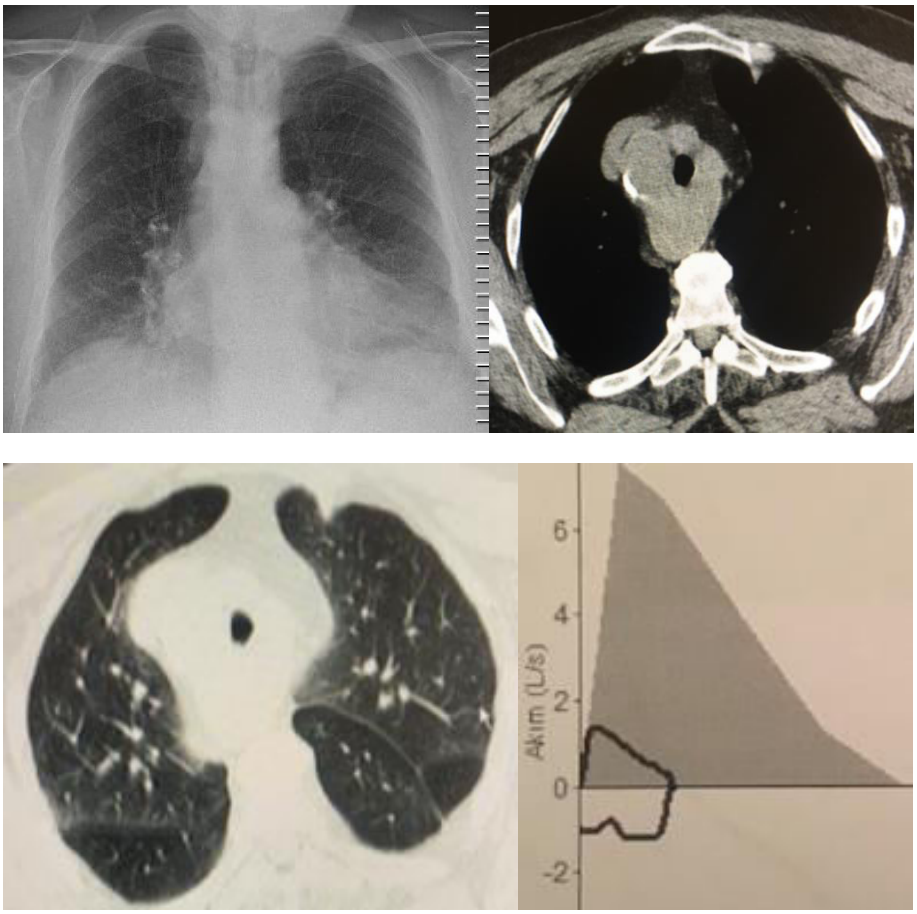

Figure 7: Chest radiography and Thoracic Ct images of 57 years-old male showing the right sided arcus aorta and flow-volume curves showing the quadrilateraliteralization pattern on spirometry.

DISCUSSION

A right-sided arcus aorta is a syndrome thought to occur in approximately ~0.1% of the population and characterized by aortic arch coursing to the right of the trachea. There are different samples of this syndrome based on the pattern of the supra-aortic branching. Most common symptoms are dyspnea with exercise and chronic cough mostly due to external compression of trachea. This anomaly can be diagnosed with imaging methods. Visualization of the arch anatomy can be demonstrated with noninvasive diagnostic methods like CT or MRI; whereas appearance of the lumen can be demonstrated with angiographic techniques like CTA or MRA. Spirometry is also a helpful diagnostic tool that detects the plateau of expirium loop in symptomatic patients [3-5]. Right-Sided Arcus Aorta syndrome is more common than estimated and should be evaluated in differential diagnosis of patients with asthma and chronic cough. We suggested that it should be called "right sided arcus aorta syndrome" in patients with exertional dyspnea and right sided arcus aorta [1]. If there is tracheal compression from RSAA, we can see the quadrilateral literalization pattern on flow-volume loops of spirometry and it is a new diagnostic finding in spirometry of patients with right sided arcus aorta is a syndrome.

In conclusion, in this study, the RSAA syndrome is clearly identified. Also, it is more common than estimated and all patients with exertional dyspnea and chronic cough should be evaluated for the RSAA syndrome. And, the quadrilateral literalization pattern on flow-volume loops of spirometry and it is a new diagnostic finding in spirometry of patients with right sided arcus aorta is a syndrome.

DISCLOSURE

“The authors have no conflicts of interest to declare”.

All of authors approved the data’s and manuscript.

DATA AVAILABILITY

The research article data’s used to support the findings of this study are available from the corresponding author upon request.

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