

## Case Report

# Spontaneous Retropharyngeal Emphysema: A Case Report

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### ABSTRACT

Retropharyngeal emphysema is usually secondary to trauma, iatrogenic injury, and obstructive respiratory diseases. Without prompt and adequate treatment, severe complication such as airway compromise may occur. Spontaneous retropharyngeal emphysema, defined by the presence of free air in the retropharyngeal space without any precipitating cause, is a rare clinical condition in pediatric otolaryngology. The predominant symptoms are sore throat, odynophagia, dysphagia, and neck pain. Here, we report a case of spontaneous retropharyngeal emphysema.

**KEYWORDS:** *Iatrogenic injury, retropharyngeal emphysema, spontaneous retropharyngeal emphysem, trauma*

## INTRODUCTION

Retropharyngeal emphysema is characterized by the presence of air in the retropharyngeal space. Most cases of retropharyngeal emphysema are associated with pneumomediastinum and have an identifiable etiology. In contrast, spontaneous retropharyngeal emphysema without any precipitating cause is a rare clinical condition.<sup>[1]</sup> Sore throat, odynophagia, dysphagia, and neck pain are the most common presenting symptoms. Without further radiographic examination, it is not easy to diagnose spontaneous retropharyngeal emphysema clinically. This article reports a 13-year-old girl with spontaneous retropharyngeal emphysema who presented with neck pain.

## CASE REPORT

The patient was a 13-year-old girl who had been relatively healthy, without either remarkable systemic disease in the past or known family disease history. The patient presented to the otolaryngology emergency department to seek treatment of lateral neck pain lasting for 1 day. Absence of fever, sore throat, toothache, dysphagia, odynophagia, cough, vomiting, and chest pain was confirmed. Furthermore, the patient had no history of trauma, foreign body ingestion, asthma, drug use, or prior surgery.

The initial physical examination indicated mild swelling with focal tenderness and crepitation on palpation over the lateral neck region. The nose, ears, oral cavity, pharynx, and larynx were found to be within normal limits after nasopharyngolaryngoscopy and otoscopy. The laboratory findings showed that the white cells, neutrophils and lymphocytes counts in blood were  $16.1 \times 10^3 /\mu\text{L}$ , 75.0 %, and 20.2 %, respectively. Results of other blood biochemistry tests were also within normal limits. The soft tissue X-ray in the neck revealed amorphous air with extension from the first cervical vertebral level to the first thoracic vertebral level at the retropharyngeal region [Figure 1]. Meanwhile, the chest X-ray did not find any abnormalities such as pneumothorax, pneumomediastinum, or foreign bodies. Furthermore, computed tomography (CT) scan of the nasopharynx to the neck exhibited free air accumulated in the retropharyngeal space [Figure 2]. Spontaneous retropharyngeal emphysema was, thus, the tentative diagnosis with data of physical, laboratory, radiological

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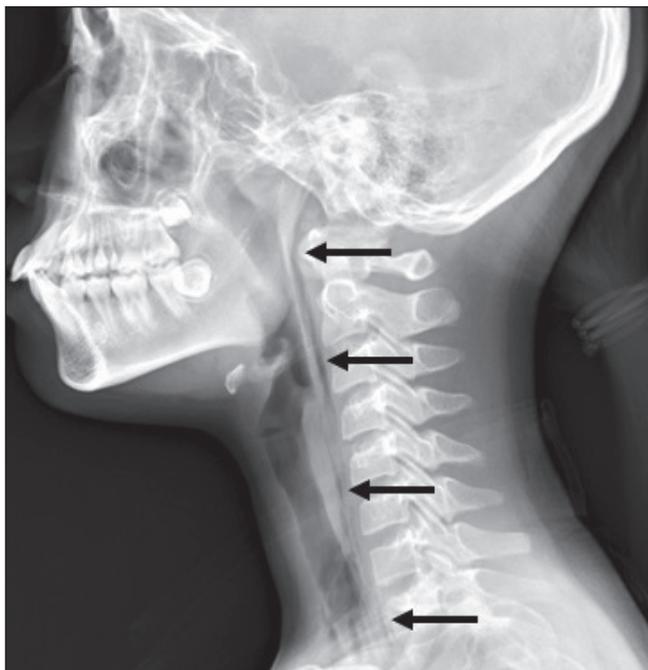
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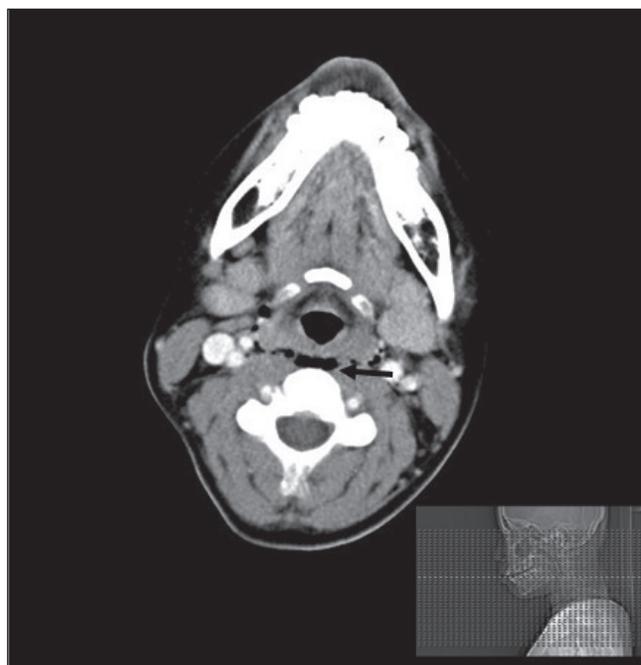
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examination, in addition to consideration of the patient's medical history.

The patient was treated with conservative measures including nothing by mouth, parenteral hydration, and bed rest. The symptom was relieved after 7 days, and nearly total regression of the amorphous air at the retropharyngeal space was noted on repeated neck soft tissue X-ray. The patient was then discharged.



**Figure 1:** The neck soft tissue X-ray showed air streaks at the retropharyngeal region (arrows)



**Figure 2:** The CT scan of the nasopharynx to the neck revealed free air in the retropharyngeal space (arrow)

She received timely follow-ups in the otolaryngology outpatient department for 1 month. No evidence of recurrence or complications was found.

## DISCUSSION

The fascial layers of the neck, including superficial cervical fascia and deep cervical fascia, are condensed connective tissues that enclose muscles. Between the layers, space is created for the potential spread of infections. The retropharyngeal space is between the middle and deep layers of the deep cervical fascia, and extends from the skull base to the mediastinum at the level of the first thoracic vertebra. Consequently, infection at the retropharyngeal space can be life-threatening because of the potential complication of mediastinitis.<sup>[2]</sup>

Retropharyngeal emphysema is defined as the presence of air in the retropharyngeal space. Depending on the presence of precipitate causes, it can be classified as spontaneous and secondary retropharyngeal emphysema. The precipitate causes for secondary retropharyngeal emphysema potentially include trauma, iatrogenic injury, obstructive respiratory disease, and substance abuse.<sup>[1,3]</sup> In contrast, spontaneous retropharyngeal emphysema, which is diagnosed after exclusion of secondary retropharyngeal emphysema, is a rare clinical condition in the practice of pediatric otolaryngology.

Clinical symptoms of spontaneous retropharyngeal emphysema include sore throat, odynophagia, dysphagia, and neck pain. The initial approach for a potential patient should include comprehensive history taking as well as a careful head and neck examination. Special attention should be paid to focal tenderness and crepitation on palpation over the neck region during physical examination. Radiographic tests are helpful for differential diagnosis. From neck soft tissue X-ray, air streaks in the cervical tissue, lucency, and widening of soft tissue anterior to the cervical vertebra can be noted. Furthermore, extension of accumulated free air in the retropharyngeal space with or without mediastinum involved can be revealed on CT.<sup>[4]</sup> The Gastrografin contrast swallow test may help to evaluate esophageal condition, if any esophageal foreign body or perforation is suspected.<sup>[5]</sup>

Spontaneous retropharyngeal emphysema is usually self-limited and has a benign clinical prognosis. The treatment strategy of spontaneous retropharyngeal emphysema should include nothing by mouth, adequate fluid hydration, and bed rest. If necessary, analgesics and oxygen support may be supplied for relief of symptoms.<sup>[6]</sup> Prophylactic antibiotics are prescribed if there is a presence of infection.<sup>[4]</sup> Surgical incision and drainage

may be necessary if complications such as mediastinitis or airway obstruction occur.<sup>[7]</sup>

In summary, spontaneous retropharyngeal emphysema should always be included in the differential diagnosis of neck pain even though it is rare. Thorough history taking and physical examination are important for initial assessment. Structural abnormalities may be ruled out with radiographic tests. Favorable outcome can be achieved with early detection and a conservative treatment strategy.

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### Conflicts of Interest

There are no conflicts of interest.

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