

Case Report

Golden S sign in a patient with squamous cell carcinoma of the lung: A case report

Chathurangi Angammana^{1,2}, P Udayakumaran², S Silva³

¹Postgraduate Institute of Medicine, University of Colombo ²Colombo South Teaching Hospital, ³University of Sri Jayewardenepura, Sri Lanka,

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Corresponding Author: Chathurangi Angammana, E-mail< cu.angammana92@gmail.com >

 <https://orcid.org/0009-0008-2599-5207>

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Introduction

The reversed S sign of Golden also named Golden S sign, is a radiographic feature seen in patients with upper lobe collapse caused by an obstructing central mass. Most literature on the Golden S sign points to the right upper lobe as the most commonly affected area, due to the shorter, more vertical orientation of the right bronchus which predisposes it to obstruction by central tumors. Identification of this sign is vital for early diagnosis and management of bronchogenic malignancies, particularly given their aggressive nature and high mortality rate. We report a presentation of haemoptysis in a 72-year-old man who had a Golden S sign in the chest radiography and was diagnosed with squamous cell lung cancer.

Case report

A 72-year-old man with diabetes and hypertension for 10 years presented with a 2-month history of haemoptysis and right-sided pleuritic-type chest pain. He did not have fever, cough, weight loss or loss of appetite and denied smoking. He had no history of exposure to occupational hazards or environmental toxins.

On examination, he was pale with no lymphadenopathy or clubbing. Lung auscultation revealed reduced air entry on the right upper zone with reduced vocal resonance and dull percussion notes. The rest of the examination was normal.

He had a haemoglobin of 11 g/dl (12-16g/dl) and an erythrocyte sedimentation rate of 77 mm/ 1st hour. The rest of the investigations including liver functions, and renal function tests were normal.

Chest X-ray posteroanterior view demonstrated the Golden S sign on the right side with upper concavity and convexity of the minor fissure (Figure 1A). Contrast enhanced computer-tomography (CECT) scan in the venous phase of the chest showed right upper lobe lung carcinoma with adjacent tissue infiltration and nodal and left adrenal metastases (Figure 1B-D).

The patient underwent bronchoscopy and the biopsy showed a squamous cell carcinoma. The tumor was staged as T2bN1M1, indicating locally advanced disease with nodal involvement and distant metastasis. With these findings he is currently being treated at the National Cancer Institute with palliation therapy.

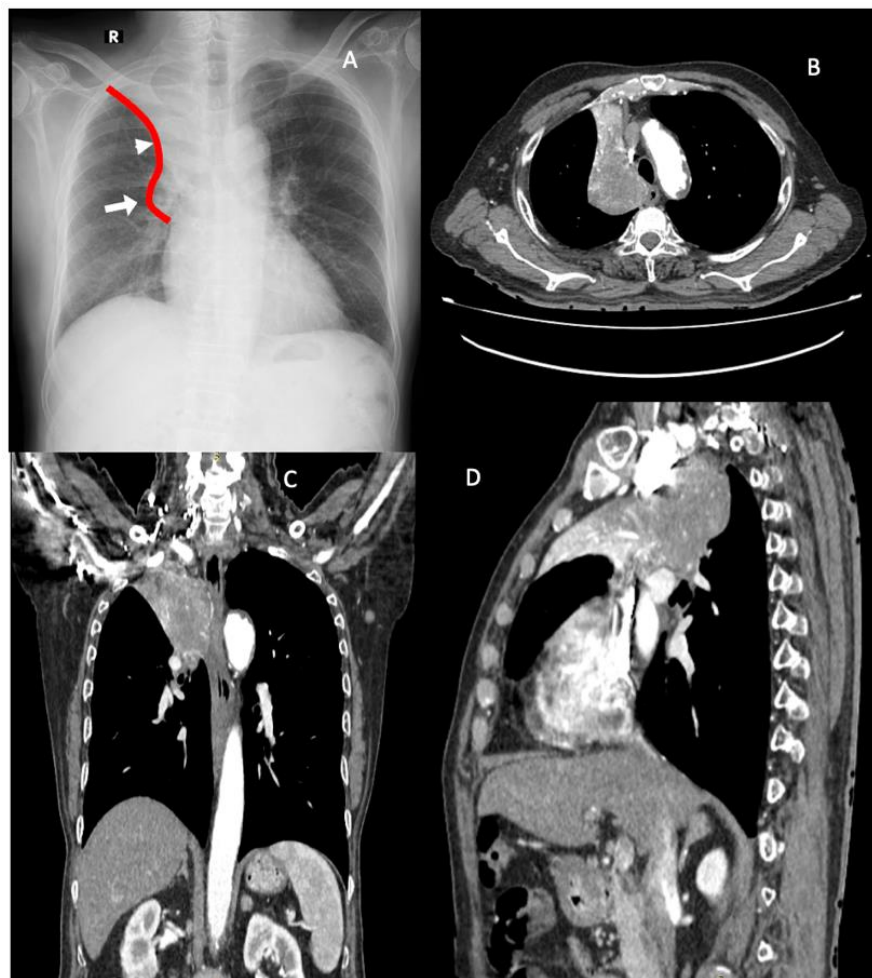


Figure 1. (A) Posteroanterior radiograph of the chest with golden S sign. Convexity (arrow) from the mass and concavity (arrowhead) of the minor fissure (B) Axial (C) Coronal (D) Sagittal views of contrast-enhanced CT showing Right upper lobe lung carcinoma with adjacent tissue infiltration and nodal and left adrenal metastases

Follow-Up and Short-Term Outcome

Following diagnosis, the patient was scheduled for palliative chemotherapy and radiation therapy to manage local symptoms. Due to the advanced stage and metastatic spread,

the prognosis remains poor. Follow-up visits are planned to monitor the patient's response to treatment and provide supportive care.

Discussion

The Golden S sign (also termed the reversed S sign of Golden) is named after Dr. Ross Golden. It is a distinctive radiographic feature, typically observed in posteroanterior chest X-rays and CT scans, indicative of upper lobe collapse secondary to an obstructing central mass [1]. This occurs more frequently on the right side due to the anatomical orientation of the right main bronchus, which is shorter and more vertical than the left making it more susceptible to obstruction.

The right upper lobe is bordered posteriorly by the major fissure, inferiorly by the minor fissure and laterally by the chest wall. Obstruction of the upper lobe bronchus by a central mass causes the collapse of the upper lobe causing upward and medial displacement of the fissures, which is seen as a concavity. Meanwhile, the mass causes outward bulging, a convexity, creating the characteristic S-shaped curve. The concave-convex contour reflects the juxtaposition of the atelectatic lobe and the obstructing mass [1,2]

A chest radiograph remains one of the most valuable diagnostic tools to identify structural changes related to central obstructing masses [3]. Identifying the Golden S sign is important as it highly suggests bronchogenic carcinomas, though it is not pathognomonic [4]. In a study done with 50 suspected bronchial carcinoma CTs, 41 were diagnosed with bronchial carcinoma. 26 out of these patients have had central tumours and three demonstrated the Golden S sign. None of these three had benign disease [4].

The histological types of lung cancer most commonly associated with the Golden S sign are squamous cell carcinoma and small cell lung carcinoma. Both of these cancers often grow centrally in the bronchi and can lead to bronchial obstruction. A reversed S sign can rarely be associated with mediastinal carcinomas, lymphoma or pulmonary metastases [5,3]. But bronchogenic carcinoma remains the commonest cause of the Golden S sign [6]. Therefore, the presence of the Golden S sign should raise suspicion of a bronchogenic carcinoma which is one of the most prevalent and poor prognostic cancers globally, with an estimated 2.2 million new cases diagnosed and 1.8 million deaths annually, accounting for about 18% of all cancer-related deaths worldwide.

Conclusion

The Golden S sign is a significant radiographic marker of bronchogenic carcinoma, particularly in cases involving right upper lobe collapse. In this case, recognition of the sign led to further investigation, culminating in the diagnosis of advanced squamous cell carcinoma with metastatic spread. Chest X-ray proved invaluable in the early detection of this malignancy, underscoring the diagnostic value of radiographic imaging in lung cancer cases.

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