Case Report

Tracheoesophageal Fistula in Chemo-Radio Treated Mediastinal Bulky Non-Hodgkin Lymphoma

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1. Abstract

In this case report, we describe the clinical history of a 67-year-old male with a mediastinal bulky non-Hodgkin lymphoma, treated with chemotherapy (R-CHOP scheme) and radiotherapy. Less than six months after complete remission, he was referred to our Gastroenterology Unit with gradual onset esophageal dysphagia, pyrosis and dry cough, especially evident after eating. The symptoms were attributed to gastro esophageal reflux and ignored by the patient himself until they had become intractable. The patient came then to our attention for a barium swallow and a CT scan that documented and confirmed the clinical hypothesis of tracheoesophageal fistula.

2. Introduction

Tracheoesophageal fistulas (TEFs) are pathological communications between the trachea and esophagus. They can be primary (1/2000-4000 births) [1] or acquired.

Acquired TEFs are mainly found in adults, with common causes being trauma, malignancy, especially lung and esophageal cancers [2], chemo radiation treatments and prolonged endotracheal intubation [3].

While the correlation between chemo- and radiotherapy, lung cancer and TEF is well known and documented [4], our aim with this case report is to explore TEFs in the setting of a chemo- and radio-treated mediastinal lymphoma, a rather rarer entity [5, 6] and the role of radiology in the diagnosis of this potentially fatal complication.

3. Discussion

A 67-year-old male with a known past clinical history of stage IV mediastinal bulky Diffuse Large B-cell lymphoma (CD 20+, CD 3-, CD 30-, Ki67 60%), was referred to our Gastroenterology Unit complaining with gradual onset dysphagia, pyrosis and dry cough after eating.

The symptoms were already present, even though not severe as in the latter stages, when the patient was declared to be in remission, less than six months earlier.

The lymphoma was diagnosed a year and a half earlier, with the patient reporting to our A&E, complaining with dyspnea, fatigue and an 11-kg weight loss in 2 and a half months.

A chest X-ray, with subsequent Chest and Total-body CT, were obtained, suggesting a possible diagnosis of late stage mediastinal lymphoma, with a bulky mass (14x14x6 cm) encircling both trachea and esophagus, extending to the nearby left lung, with thrombosis of the left jugular vein. The diagnosis was histologically confirmed after biopsy of left latero-cervical lymph nodes.

The patient underwent a combined protocol, in another institution, with an R-CHOP chemotherapy

Figure 1: Barium swallow, patient in LPO (Left Posterior Oblique) position. Barium starting to flow into the esophagus (A) and subsequently into the left main bronchus (B), through the fistular orifice.

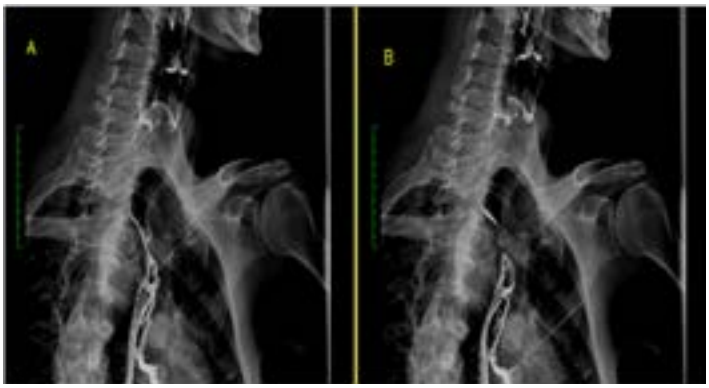

Figure 2: Barium swallow, patient in LPO position. The fistular opening is more evident as a round translucency in the tracheal wall (A, blue arrow); barium flowing down into the left lower lobe bronchial system (B, pink arrow).

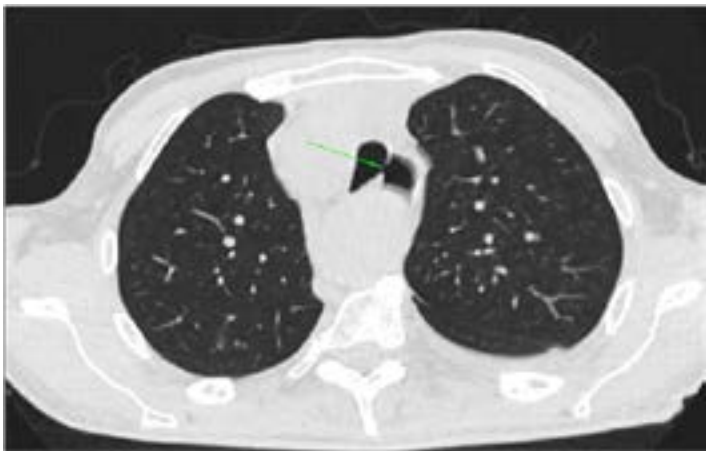

Figure 3: CT, Axial view: fistular communication between left posterolateral portion of the distal trachea and the adjacent esophagus (green arrow, 4 mm)

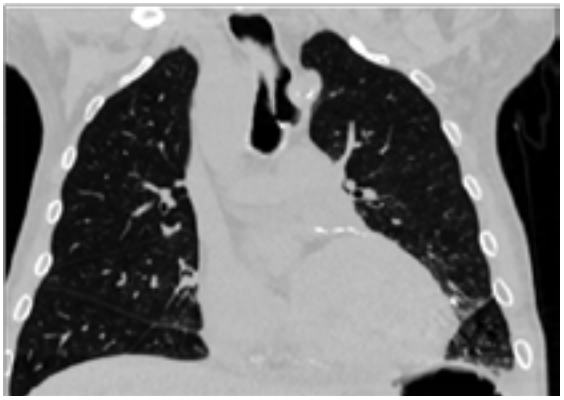

Figure 4: CT, Coronal view: fistular communication between left posterolateral portion of the distal trachea and the adjacent esophagus.

Figure 5: CT, Sagittal view: fistular communication between left posterolateral portion of the distal trachea and the adjacent esophagus (red arrow).

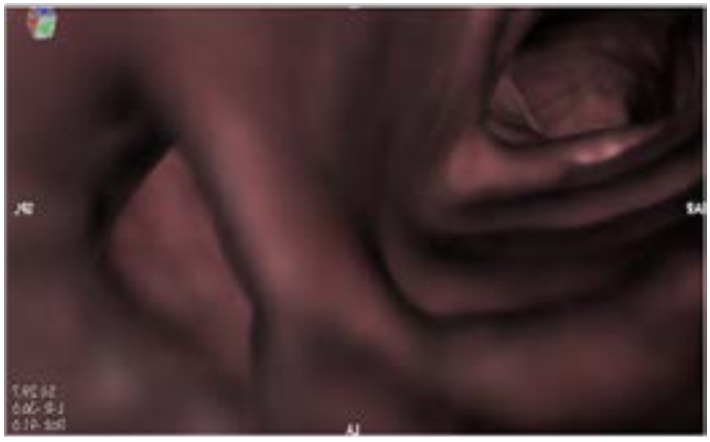

Figure 6: CT, Virtual Endoscopy: the fistula is evident as a rounded opening (diameter 4 mm) on the left posterolateral portion of the distal trachea; carina can be seen on the right.

and intensive fractioned radiotherapy; thanks to the excellent response to the treatment, he was declared disease-free almost 10 months after primary diagnosis, and he still is, from on oncological point of view.

Due to the gradual worsening of the dysphagia and coughing, which had become intractable by the time the patient had come to our attention in the Radiology Department, almost a year and a half after the primary diagnosis, the patient went back to our A&E complaining about his symptoms, which worsened while eating; eating had become almost impossible. He also added he felt generally weaker after chemo-radiation, having often suffered with fever and

cough in the last six months. CXR and laboratory tests were taken and were rather inconclusive. CXR was unremarkable except for diffuse interstitial prominence. Lab workup was normal, with a WBC of 8.4 x 10^9/L.

The patient was, however, admitted to the Gastroenterology Ward, where a clinical hypothesis of tracheoesophageal fistula was formulated, even though gastro esophageal reflux could not be ruled out due to the presence of characteristic symptoms.

He was then sent to our Radiology Department to have a dynamic esophagogram; he appeared to be in apparent good health, with no symptoms whatsoever before the examination started.

After the CXR was taken, unremarkable just as that taken in the A&E setting, we started acquiring a left-posterior-oblique (LPO) series, using a medium-density small barium bolus.

As soon as the barium started to flow into the esophagus, a fistular communication became evident; with a small quantity of barium reaching the left main bronchus and the branches for the left lower lobe (Figure 1A-B, 2A-B). Apart from some coughing, the patient's clinical conditions were good, mainly because the barium bolus was adequately small.

Left Posterior Oblique (LPO) and Antero Posterior (AP) views were acquired, without barium. Left basal pleural effusion appeared on the last image (AP view).

The patient was immediately brought to have a CT scan, which confirmed the presence of a tracheoesophageal fistula, connecting the left posterolateral, distal portion of the tracheatp the esophagus, almost at the carina, with barium found either in the trachea, left main bronchus, and left lower lobe bronchial system (Figure 3,5,6). Presence of small amount of pleural effusion on the left was confirmed as well (Figure 4). No other finding was noted at Chest CT. Endoscopy with esophageal stent placement were subsequently carried out.

4. Conclusion

TEF is a known, often fatal complication of thoracic malignancy, with a huge role played by chemo- and radiation treatment, too. Intractable cough and recurrent lung infections, aspiration pneumonits, lung abscesses, mean poor prognosis for the patients that generally die within a month [4].

Even though a clear mechanism for fistular formation is still not understood, many risk factors can be considered for it: the malignancy itself with its invasive potential, radiation therapy and, especially, re-irradiation, that weaken considerably the tracheal and esophageal wall, and chronic inflammation, among others [1].

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