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Radiochemotherapy and Immunotherapy for A Tracheal Carcinoma

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Abstract

Tracheal cancer is a rare localization with a lack of treatment consensus. A 45-year-old man presented a tracheal squamous cell carcinoma with mediastinal nodes and oesophagus involvement. Treatment consisted in induction chemotherapy, radiochemotherapy and immunotherapy. The different PET realised before, during and after induction chemotherapy helped to precise the radiotherapy volumes. Three months after radiochemotherapy, PET CT showed a partial response. We report choices done in our service in terms of radiotherapy and systemic treatment.

Keywords: Radiotherapy; Tracheal Cancer; Squamous Cell Carcinoma

Introduction

Tracheal cancers are a rare tumour localisation, estimated at less than 0.1 per 100,000 inhabitants [1]. Tobacco is the main risk factor [2]. Histological differences are described - the three most common being squamous cell carcinoma, adenocarcinoma and adenoid cystic carcinoma. The princeps treatment is based on surgery, radiotherapy being reserved either for the inoperable case or as an adjuvant in case of histopathologic poor prognostic factors [2,3]. Various systemic treatments have been combined concomitantly to radiochemotherapy, mostly cisplatin derivatives [4,5].

Case Presentation

Characteristics and Treatment Decisions

A 45-year-old man, performance status 0, with no particular medical history except smoking and asthma, developed a squamous cell carcinoma of the trachea, discovered by pharyngeal pain. A CT scan found thickening of the left wall of the trachea on 12 and 19 mm. The fibroscopy showed a budding tracheal lesion located 2 cm below the vocal cords by 3 cm in height with a halving of the caliber of the trachea. Biopsies were in favor of a PDL1 negative squamous cell carcinoma. The multidisciplinary panel (MTP) recommended a chemotherapy first line associating carboplatin and paclitaxel due to a respiratory aggravation. The patient refused a tracheal prosthesis. After two cures, a CT and endoscopic reassessment found a partial response at the level of the tracheal lesion and lymphadenopathy. Radio-chemotherapy was decided because of the oesophageal invasion and the surgery patient's refusal.

Imaging

The positron emission tomography/ computed tomography (PET CT) before chemotherapy described a hypermetabolism of the lateral wall of the left trachea with a max SUV of 13 without hypermetabolism at the mediastinal level. A second one performed after the end of the 1st chemotherapy found

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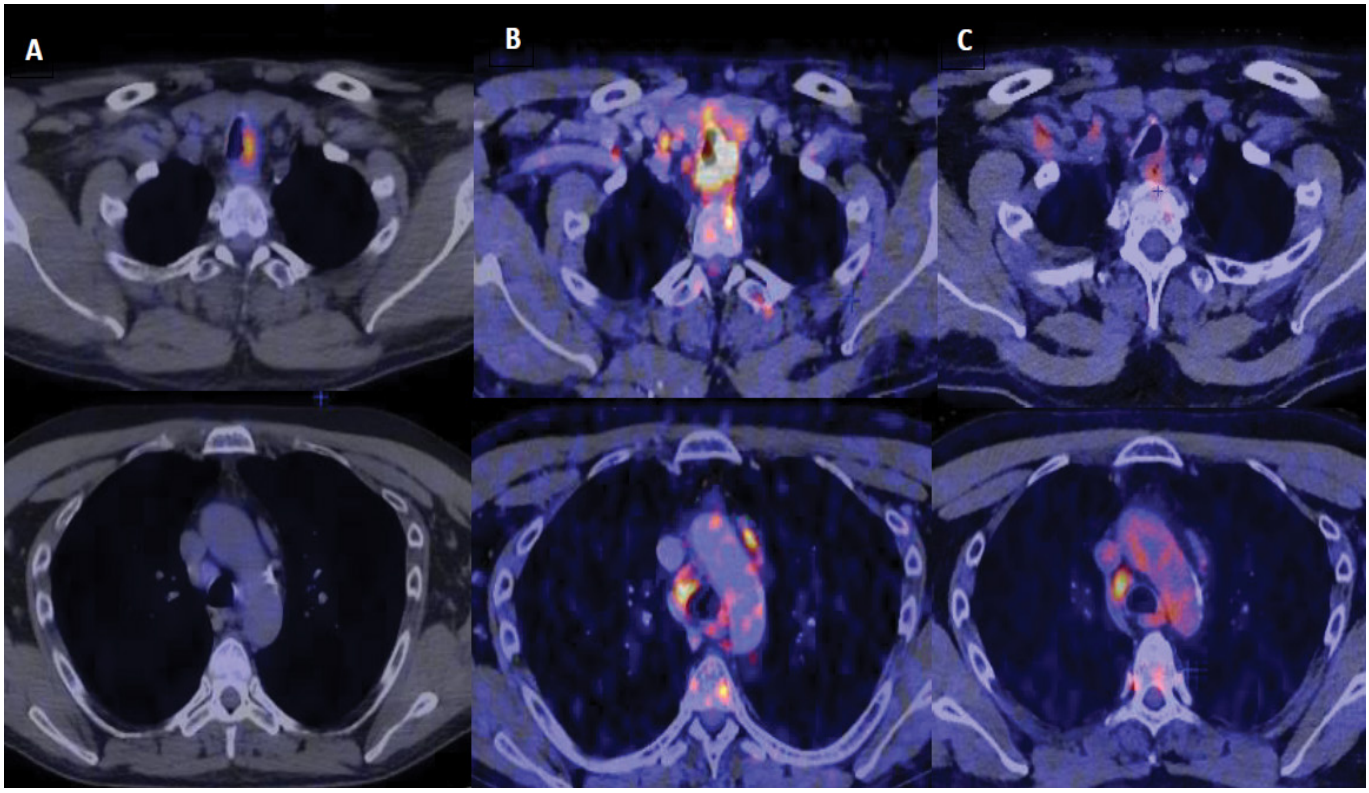

Figure 1: Evolution of PET CT scans before radiotherapy treatment.
From column left to right: A. Before chemotherapy-; B. After the 1st chemotherapy and C. After completion of chemotherapy, for radiotherapy treatment.

the initial tracheal involvement with a max SUV of 11 and mediastinal involvement not previously present with lymphadenopathy located in the upper left paratracheal, lower right laterotracheal and paratracheal regions. The PET CT performed just before radiotherapy found a partial response with disappearance of the tracheal focus and persistence of a moderate-intensity focus remaining suspicious involving Barety's space. The figure 1 shows the visible changes between the different PET CT.

Treatments

Radiotherapy

A CT scan with a 5-point mask was performed. A PET scan in the treatment position was done within 48 hours to help delineation and comparison with previous targets. After consulting a Cancer Control Center, the total dose consisted of 66 Gy in 33 fractions. The volumes included the initial tumour, taking in consideration the evolution and barriers with a CTV margin of 5 mm. Initial mediastinal lymph nodes still morphologically or metabolically present were included with a margin of 5 mm. This volume was adapted to the affected areas and to the initial volumes of the lymph node CTV. A 5mm PTV was taken. Figure 2 shows the delineation made.

Systemic Treatment

Systemic treatment with Carboplatin AUC Paclitaxel 175 mg/m2 was pursued during radiotherapy. Durvalumab started after completion of radiochemotherapy.

Acute Tolerance

Radiotherapy and chemotherapy were well tolerated with grade 1 asthenia, grade 2 esophagitis. Swallowing disorders were reported, compatible with silent aspiration but not found using endoscopic exam.

Treatment Evaluation

At 3 months after radiochemotherapy, an improvement of breathing and silent aspiration were described. PET CT and CT scan showed a partial response with stability of the Barety's space node, previously in the area of radiotherapy treatment receiving 66 Gy. Due to the partial response, the multidisciplinary panel decided continuation of Durvalumab with a close follow up. Figure 3 illustrates the PET and CT scan aspect.

PET CT: A et B and CT: C – partial response on node (arrow).

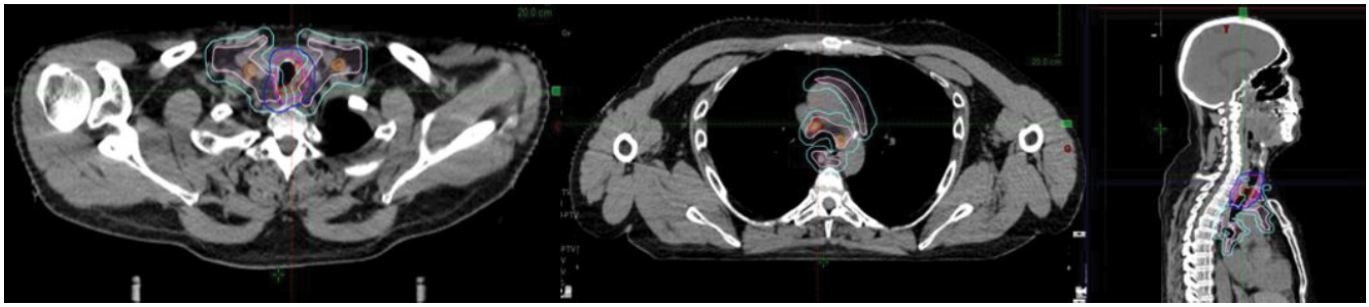

Figure 2: Delineation. P: Primary Tumour – N: Lymph Nodes

Red: GTV P; pink: CTV P; Dark blue PTV – P; light pink CTV N; light blue PTV N.

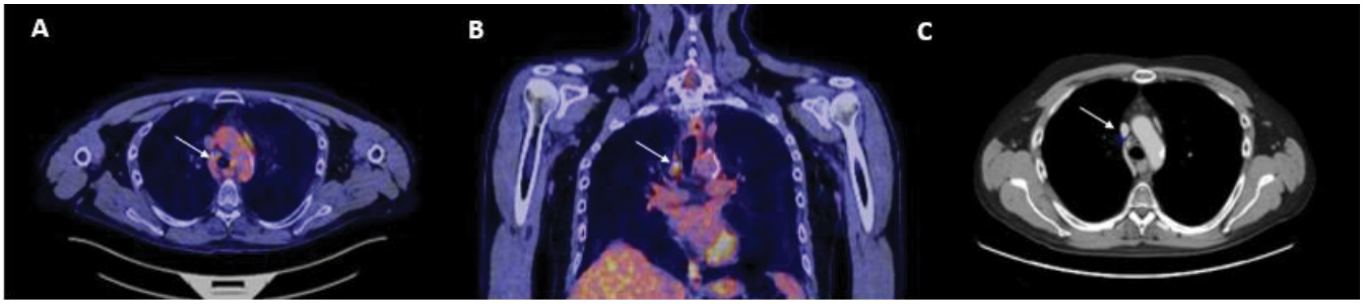

Figure 3: Evaluation after three months.

PET CT: A et B and CT: C – partial response on node (arrow).

Discussion

This is a rare case of tracheal tumour, with esophageal and lymph node involvement, touching a young patient with few comorbidities. Treatment with chemotherapy, radiochemotherapy and immunotherapy was well tolerated without requiring dose reduction or discontinuation. The mediastinal involvement not found in imaging before chemotherapy was not documented and generated an additional volume. The second advice at our centre was not in favor of an infectious etiology. The persistence, at least morphological, of the macroscopic adenopathies led to the choice to consider them as pathological. The delay between the first imaging and the start of chemotherapy could explain an unknown progression. The verification of the evolution by the different modalities of imaging and endoscopy examinations helped to precise radiotherapy volume with major information on the targets. The good general condition of the patient had permitted to carry out a treatment with concomitant chemotherapy. Most of the published series and case reports have instead used cisplatin alone 100 mg/m2 or weekly 40 mg/m2 [5–7] compared to carboplatin paclitaxel [8]. The extension limited to the esophagus did not lead to the placement of a prophylactic gastrostomy. Careful monitoring was done due to the increased risk of esophagitis and fistula as acute and late side effects respectively. The choice of volumes and margins in the case of squamous cell carcinoma is not consensual. Those performed by the department were consistent with the practices described in two articles [4,7] and approached the volumes used in Ear Nose and Throat (ENT) and pulmonary radiotherapy [9,10]. As locoregional progressions are described in tracheal squamous cell carcinomas, lymph node coverage seemed important by taking at least the initial affected areas. Prognostic of tracheal cancer remains low, especially if no surgery. Overall survivals (OS) were around 14-47% at 5 years on published cohorts [3–5,11–15]. A case report found a complete response after immunotherapy Pembrolizumab [16]. To our knowledge, it is the first case report published with adjuvant Durvalumab like Pacific Trial [17].

Conclusion

This case report shows the importance of the complementarity of endoscopic, morphological and metabolic examinations in the management of tracheal cancers. The choice of lymph node areas can lead to discussion, especially in the absence of consensus on the volumes. A benefit of immunotherapy is a possible hypothesis, as responses are described for ENT and lung squamous cell carcinoma. Local control and survival remain low in the absence of surgery, supporting a close follow up.

Conflict of Interest

None.

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