“Radiotherapy induced malignancy - Second Primary SCC cervical oesophagus presenting as tracheoesophageal fistulae following treatment for locally invasive thyroid cancer with post-operative adjuvant radiotherapy”

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Introduction

In this case report, we present a 41 year old female patient who had previously undergone surgical de-bulking, radio iodine ablation and external beam radiotherapy for management of locally advanced thyroid cancer in 2006 and malignancy went on to develop a second of the cervical oesophagus over 10 years after her original cancer diagnosis felt to be a consequence of initial treatment.

Case report:

At the time of initial presentation, she complained of a lump in the neck. This was evaluated with USS / FNA and well differentiated papillary thyroid cancer with nodal involvement was diagnosed.

Surgical resection was challenging as the tumour was densely adherent to the recurrent laryngeal nerves bilaterally. Final histological staging was T4, N1b (13/23), M0 using TNM staging 6. She had a difficult post-operative period requiring tracheostomy and RIG insertion for feeding. She received multiple doses of radio-iodine over the next 18 months supplemented by 30 cycles of 60Gy external beam radiotherapy. Following treatment, she experienced extensive scarring in the neck causing a fixed flexion deformity due to development of fibrotic scar tissue in the anterior neck. Her recurrent laryngeal nerve function recovered somewhat although she remained RIG dependent for feeding.

She had regular follow up with clinical examination and surveillance with thyroid functions and thyroglobulin blood tests. Thyroglobulin was undetectable following her final course of radio iodine.

Late 2017, she presented to Head and Neck clinic with progressive dysphagia to solids over the previous 2 months which included liquids over the last three and a half weeks. She also reported worsening dysphonia and some stridor on lying flat along with weight loss despite her RIG still being in situ. New right vocal cord palsy and palpable left posterior neck node was identified on fibreoptic nasendoscopy and clinical examination.

CTPA performed at her local hospital demonstrated a tracho-oesophageal fistula (red arrow Fig 1a+b) with extensive thickening in the cervical oesophagus. Bilateral nodular consolidation was also present and she was started treatment for aspiration pneumonia. A malignant process within the neck including local recurrence of her thyroid cancer was suspected. She was referred into the Central Thyroid Cancer service at our centre for further discussion and management.

Because of her longstanding post therapy cervical ankylosis and fistulous connection between trachea and oesophagus, direct visualisation and tissue sampling was felt to be unsafe and risk terminal compromise of her airway. Therefore an FDG PET/CT was performed to look at the metabolic signature of the oesophageal thickening and potential alternative biopsy sites.

FDG PET/CT showed oesophageal thickening was intensely metabolically active (Fig 2) with several separate, FDG avid cervical and upper abdominal nodes. In addition she had a solitary, metabolically active, lytic bone lesion in the right 10th rib (red arrow Fig 3). This was felt to be the most suitable target for biopsy and histological analysis of the biopsy sample identified metastatic squamous cell carcinoma of likely upper GI origin. Best supportive management was felt to be the most appropriate course of action.

The patient subsequently passed away at home.

Images:

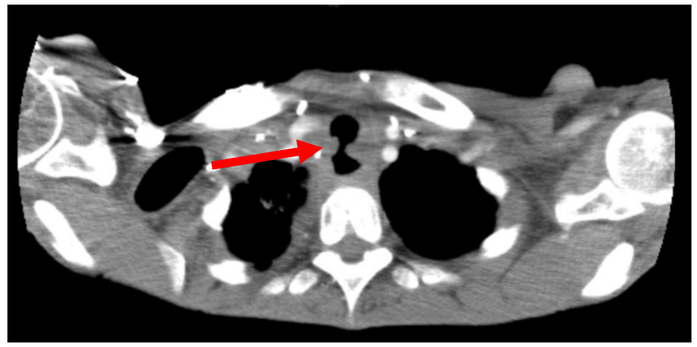

Figure 1a: tracheoesophageal fistula on CTPA

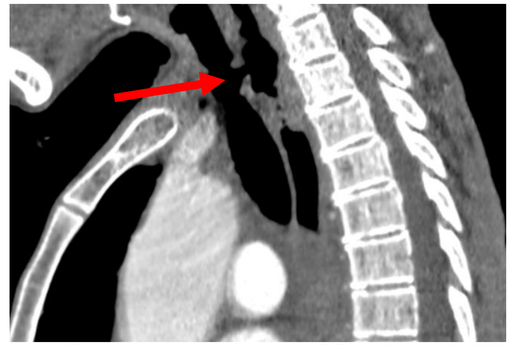

Figure 1b: tracheoesophageal fistula on CTPA

Figure 2: intense FDG uptake associated with oesophageal thickening

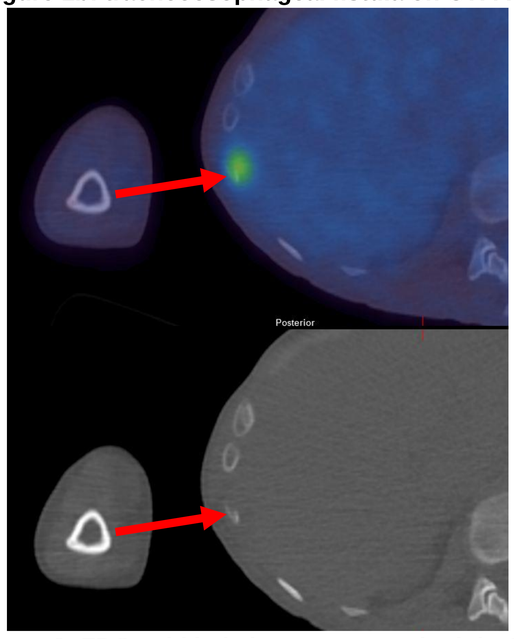

Figure 3: FDG avid lytic bone metastasis right 10th rib

Discussion:

Thyroid malignancy is often successfully managed with surgical excision with or without adjuvant radio iodine ablation with a 10 year survival rate of 80-90%. External beam radio therapy should be considered in patients with a “…high risk of recurrence / progression with: (a) gross evidence of local tumour invasion at surgery with significant macroscopic residual disease, or (b) residual or recurrent tumour that fails to concentrate radioiodine i.e. loco-regional disease where further surgery or radioiodine is ineffective or impractical”[1].

It is important to be aware of the risk of inducing additional malignancies and careful consideration of risks and benefits of treatment is recommended. When patients present with signs of malignancy after a prolonged interval following treatment for thyroid malignancy, a second primary tumour should be within the differential and repeat tissue sampling is advocated[2]

References:

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2. Braunstein, S., Nakamura, J.L. Radiotherapy-induced malignancies: Review of clinical features, pathobiology, and evolving approaches for mitigating risk. Front Oncol. 2013;3:73