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Title

The importance of timing in staging head and neck cancer: cervical adenopathy post tonsillectomy mimicking malignancy

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Case Report

A 34-year old non-smoking male underwent bilateral tonsillectomy for presumed recurrent tonsillitis. Preoperatively, there was a palpable mass in the mid pole of the left tonsil and computed tomography (CT) demonstrated a left tonsillar mass with an ipsilateral level 2 lymph node, favored as benign. Histopathology from a non-oncological bilateral tonsillectomy revealed a left 22mm transected non-keratinizing squamous cell carcinoma with strong p16-positivity. The right tonsil was benign. The patient was subsequently referred into a multidisciplinary head and neck service for management.

Postoperative staging with a F18-fluoro-2-deoxy-D-Glucose positron emission tomography/CT scan (FDG PET-CT) performed day 11 tonsillectomy showed left tonsillar bed uptake (SUV 7.5) extending to the lateral oropharyngeal wall, inferiorly to the base of tongue with effacement of the vallecula (SUV 15.0) and superiorly to the soft palate. The contralateral (benign) tonsil showed no avidity. Contiguous avid nodes were noted in the left level II and III cervical lymph nodes (SUV 8.6) and three small avid nodes in level IIB and level III were reported as metastases. A mildly avid contralateral (right) 11mm level II node was reported as suspicious for metastasis. Staging based on FDG PET-CT was cT2N2c.(1) Findings on clinical examination were discordant with the imaging with no clinical evidence of residual disease.

Based on this staging the initial recommendation at a multidisciplinary meeting was for definitive chemoradiotherapy to the bilateral neck with three-weekly high dose cisplatin.

The case was represented the following week, where an alternate approach of close clinical observation and repeat imaging with FDG PET-CT and Magnetic Resonance Imaging (MRI) in four weeks was suggested.

Repeat PET-CT at four weeks showed resolution of all avidity and MRI showed no evidence of residual disease. Treatment options of ipsilateral radical radiation or trans-oral robotic assisted radical tonsillectomy (TORS) with left-sided neck dissection were presented to the patient who elected to proceed with surgical management. Pathology showed no evidence of any residual carcinoma and his final pathological staging was pT2N0.(1) No adjuvant radiation was required.

The immediate postoperative period was complicated by trismus requiring physiotherapy and analgesia. Six months post-treatment, the patient has returned to full time employment, has no treatment-related sequelae and is eating and drinking normally. Six-month follow-up nasendoscopy and FDG PET-CT scan showed no evidence of recurrent disease.

Discussion

FDG PET-CT staging is widely regarded as standard of care in the staging of head and neck cancer.(2) It has been shown to have superior sensitivity and specificity compared with CT in determining the extent of locoregional and distant disease.(3) Benign processes such as infection and inflammation are recognised to reduce specificity of FDG PET-CT and may lead to false positive findings.(3,4) Timing of FDG PET-CT in the work up of head and neck cancers is key, due to the risk of false positive findings and over-treatment.(3, 4) To maximize the

accuracy of FDG PET-CT it should be performed prior to significant surgical procedures. There is a lack of data regarding the optimal timing of repeating FDG PET-CT following surgical interventions and this case highlights the need for early referral to experienced multidisciplinary teams to optimize timing of investigations.

For patients with recent surgical intervention in whom an early PET-CT suggests regional disease extent incongruous with the presenting clinical findings, close observation and an interval PET-CT should be considered.

In this case the change in staging from cT2N2c to cT2N0 enabled the patient to be treated with surgery alone and avoid significant acute and late toxicities of definitive chemoradiotherapy.(1) Despite advances in radiotherapy planning and delivery, these toxicities with chemoradiotherapy remain major challenges. Acute effects include mucositis, dysguesia, hyposalivation, odynophagia and dysphagia and a need for enteral feeding.(5) The long-term sequelae include late-onset dysphagia, osteoradionecrosis and dental decay.(5)

In contrast to smoking and alcohol related head and neck cancers, HPV-associated oropharyngeal cancer has been on the increase over the last two decades.(6) Treatment-related morbidity is particularly important in these patients owing to a younger patient cohort with significantly improved long-term survival.(7)

FDG PET-CT should be interpreted with caution following tonsillectomy and other surgical procedures, given the possibility of false-positive findings. The case illustrates the need for early referral to multidisciplinary oncology meetings to allow appropriate scheduling of staging. When an early PET-CT is incongruous with the presenting clinical findings, close observation and an interval PET-CT after 4-6 weeks should be considered. This may prevent over-treating HPV related oropharyngeal carcinoma patients who are in an excellent prognostic group.

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Figure Legends

Images A demonstrating MIP and axial fused FDG PET-CT images day 11-post tonsillectomy
Images B demonstrating MIP and axial fused FDG PET-CT images week 5 post tonsillectomy

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