

Head and neck cancers masquerading as deep neck abscesses

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ABSTRACT Deep neck space abscesses are common otolaryngological emergencies, and prompt incision and drainage is the treatment of choice. Head and neck cancers often present with cervical metastases that may become secondarily infected. Clinical presentation is similar to a deep neck abscess. Surgical drainage of such collections has implications on subsequent treatment. In this case series, we describe six cases with this unusual presentation that were subsequently found to have a head and neck malignancy, and where three patients had their abscesses treated surgically. We aim to raise awareness of this unusual presentation of a head and neck carcinoma, and to avoid a potential pitfall in the management of deep neck abscess.

Keywords: cervical metastases, head and neck cancer, neck abscesses
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INTRODUCTION

Deep neck space abscesses are common otolaryngological emergencies, particularly in patients with diabetes and poor dental hygiene. Early and adequate surgical drainage remains the cornerstone of treatment.⁽¹⁻³⁾ Odontogenic and upper airway infections are two common aetiologies.⁽¹⁻⁸⁾ Head and neck squamous cell carcinomas (HNSCCs) often present with cervical metastases. Rarely, these metastases – particularly those of the cystic variety – may become infected and present as a neck abscess.^(6,8-10) Abscesses can also develop from direct tumour extension undergoing necrotic change. Diagnosis and subsequent treatment is delayed if malignancy is not clinically suspected. More importantly, the incision and drainage of cervical metastases has grave implications on subsequent prognosis. We report our experience with six patients who had this unusual presentation and aim to raise awareness about this potential pitfall in the management of deep neck abscesses.

CASE REPORTS

Case 1

A 63-year-old Chinese man with no past medical history presented with fever and a painful right neck mass that had persisted for three days. He was febrile with a tender 3-cm right submandibular mass. His upper aerodigestive tract was normal. He was treated conservatively with intravenous antibiotics without improvement. Computed tomography (CT) revealed a multiloculated right submandibular abscess. Incision and drainage was performed. Simultaneous re-examination of the nasopharynx revealed irregular mucosa and a biopsy was performed. Pus cultures grew *Klebsiella pneumoniae*. While histology of the abscess wall only showed reactive changes, the postnasal space (PNS) biopsy revealed undifferentiated nasopharyngeal carcinoma. The patient was staged as stage I

(T1N1M0) nasopharyngeal carcinoma (NPC). Curative treatment with radiotherapy was delayed until his neck wound had healed.

Case 2

A 32-year-old Indian man with no past medical history presented with fever, dysphagia and a painful right neck mass of two weeks' duration. He was febrile with a tender, fluctuant 4-cm right level II neck mass and had trismus. Nasal endoscopy showed secretions in the PNS and hypopharynx. CT revealed right tonsillar inflammation with an associated right parapharyngeal abscess. Incision and drainage was performed. Pus cultures grew beta-haemolytic *Streptococcus* and histology of the abscess wall showed reactive changes. He was discharged with culture-sensitive oral antibiotics and returned to the outpatient clinic for daily dressing. He subsequently complained of a painless left-sided neck swelling three weeks after the initial presentation. Re-examination revealed a right-sided PNS mass extending into the oropharynx and a 1-cm left level V lymph node. PNS biopsy showed undifferentiated NPC. The patient was staged as stage IVA (T4N2M0) NPC. Curative chemoradiotherapy was delayed until his neck wound had healed.

Case 3

A 51-year-old Chinese woman with no past medical history presented with fever and a painful left-sided neck mass of two days' duration. She was febrile with a cystic, tender 8-cm left level II neck mass. Nasal endoscopy revealed an exophytic mass arising from the left fossa of Rosenmüller. CT showed a left nasopharyngeal tumour with multiple left levels II–V cervical lymphadenopathies with central necrosis and marked inflammatory changes representing either extracapsular spread or superimposed infection. Aspiration showed neither bacterial growth on culture nor any atypical cells, and PNS biopsy revealed invasive

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nonkeratinising carcinoma. The patient was symptomatically better after four days of intravenous antibiotics. She was staged as stage IVA (T4N2bM0) NPC.

Case 4

A 54-year-old Chinese man with no past medical history presented with fever and a painful right neck swelling of three days' duration. Examination showed that he was febrile with a tender, cystic 3-cm right level II neck mass. Nasal endoscopy revealed a right postnasal mass, which showed undifferentiated NPC on biopsy. Magnetic resonance imaging showed a right soft tissue mass arising from the fossa of Rosenmüller with multiple bilateral level II–V cervical lymphadenopathies, with the largest at right level II with central necrosis. He was treated with two weeks of intravenous antibiotics before he became afebrile and fit for discharge. He was staged as stage III (T2N2bM0) NPC.

Case 5

A 52-year-old Chinese man with a history of diabetes mellitus presented with a painful left-sided neck mass for two days. The neck mass had been present for two months but had recently increased in size and became painful. Examination showed a fluctuant, tender 3-cm left level II neck mass. The rest of the head and neck examination was normal. CT revealed clusters of necrotic left level II lymph nodes with adjacent inflammatory changes from the level of the pyriform sinus to the thyroid gland. Fine-needle aspiration (FNA) of the mass revealed only the presence of inflammatory cells. Thus, incision and drainage was performed. There was no bacterial growth on culture. Histology of the abscess wall revealed atypical squamous cells. The patient was re-examined and nasal endoscopy revealed mild mucosal irregularity of the left pyriform sinus, which showed squamous cell carcinoma (SCC) on biopsy. The patient was staged as stage IVA (T1N2bM0) hypo-pharyngeal carcinoma. He underwent extended left radical neck dissection that encompassed the old incision site with a 1-cm margin. He commenced definitive chemoradiotherapy six weeks after surgery. Despite the dismal prognosis of hypopharyngeal cancer, he is currently free of disease at 29-month follow-up.

Case 6

A 57-year-old Chinese man, a smoker, presented with a painful right-sided neck mass of three days' duration with fever. Examination showed a tender 3-cm right level II neck mass. There were no other clinical abnormalities on head and neck examination. FNA of the mass revealed the presence of pus and CT showed a right level II neck abscess. Pus cultures grew *Staphylococcus aureus* and cytology reported features that were compatible with an abscess. However, re-examination of the head and neck prior to incision and drainage showed mucosal irregularity of the right pyriform sinus on Valsalva manoeuvre. Biopsy of the lesion revealed SCC and the patient was staged as stage IVA (T2N2bM0) hypopharyngeal carcinoma. He subsequently underwent

definitive chemoradiotherapy and is free of disease at the 12-month follow-up.

DISCUSSION

Initial presentation of head and neck cancers as a neck abscess is rare. Metastases from certain primary head and neck sites, such as the nasopharynx, tonsil and thyroid, may give rise to cystic nodal metastases. These cystic metastases may become infected and produce signs of sepsis, such as skin erythema, fever and a raised white cell count. Similarly, other metastases may undergo central necrosis and may appear on imaging as suppurative lymph nodes. Direct tumour extension undergoing necrosis can also cause deep neck abscesses. The initial diagnosis of a neck abscess is therefore entirely reasonable and malignancy remains undetected.

In our first four cases, none of the patients had associated symptoms of NPC, such as a middle ear effusion. All had presented with a painful neck mass and fever. The second patient, of Indian ethnicity, does not share the genetic risk of undifferentiated NPC seen in our local Chinese population. Hence, the index of suspicion for NPC was lower. The need for a meticulous head and neck examination by an experienced clinician is further illustrated in Cases 5 and 6. Hypopharyngeal carcinoma is known to be insidious, and patients may be asymptomatic in the early stages. Compounded with excessive pooling of secretions and surrounding oedema, there was thus difficulty and delay in diagnosing these two patients. In both cases, the primary tumour in the hypopharynx was only visible on nasal endoscopy when the patient performed a modified Valsalva manoeuvre with head rotation away from the side of the lesion. This was fortunately done before attempted surgical drainage in Case 6.

Incision and drainage is the mainstay of treatment for most patients with neck abscess. It leaves an open wound that can be regularly cleaned and inspected, and heals by secondary intention. This surgical treatment of the infection may cause a delay in the definitive treatment of the cancer. Moreover, incising a cervical metastasis from HNSCC may seed the tumour into the soft tissues of the neck and skin as loculations are broken down. Surgery may also alter normal lymphatic and vascular drainage, and further encourage the dissemination of carcinoma cells. This may diminish the chances of curative treatment.

Cases 2 and 5 highlight the need for careful review of cytological and histological specimens. The literature suggests that initial pathological examination of aspirates or the abscess wall is often negative for malignancy because when there is an abundance of inflammatory cells, the presence of a few atypical clusters of cells may go unnoticed. The clinical presentation may also influence the pathologist's diagnosis. Even in the presence of benign pathology, patients with resolved neck abscesses should be carefully followed up by an ENT surgeon, as malignancy may reveal itself during convalescence.

Our case series demonstrates the need for meticulous physical examination of the head and neck in all patients who

present with neck abscess. In modern medical practice, this should include flexible nasal endoscopy by an experienced clinician. In patients at high risk of HNSCC, such as smokers, alcoholic drinkers and older patients, and in countries where NPC is endemic, the index of suspicion must remain high even in the presence of initial benign cytology. The effect of incising metastatic neck nodes and curettage of the abscess cavity on subsequent survival is unknown, but an experiment with animal models reported a higher incidence of lymphatic metastasis after incision of metastatic neck nodes.⁽¹¹⁾

For patients with known HNSCC who present with neck abscesses, the authors recommend a period of inpatient intravenous broad spectrum antibiotics until symptoms improve. The patient's progress should be monitored daily by the ENT surgeon using clinical parameters and physical examination. Laboratory blood test should be repeated when necessary if the patient is septic. CT should also be performed as it gives a baseline size of the abscess and helps in revealing any pathology missed during clinical examination. Serial aspirations of abscesses may hasten resolution, and aspiration under ultrasonographic guidance may be useful.

Biopsy of the primary site and staging scans should be performed at the earliest opportunity. In cases of high-risk patients with acute presentation of neck abscess associated with airway compromise, we recommend that securing of the airway, panendoscopy and biopsy be performed in theatre before proceeding to drain the abscess. With regard to subsequent management of patients with incision and drainage performed for neck metastasis, we recommend an extended radical neck dissection, taking an ellipse of skin around the incision site. Such

patients should be treated as cases of cervical metastases with extracapsular spread. Selective or functional neck dissection is discouraged, and adjuvant radiotherapy should encompass the entire ipsilateral neck.

In conclusion, when managing an abscess in the neck, the age-old surgical adage, "never let the sun set on an abscess", should rightly be tempered with Alexander Pope's caution – "Fools rush in where wise men fear to tread."

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