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Family Medicine

A Cervical Rib Presenting as a Unilateral Neck Lump in a Five-Year-Old Child

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Abstract **Case Report**

A five-year-old female patient presented to a family medicine clinic with a new, painless lump in the left supraclavicular fossa. She presented following a viral illness six weeks prior. She was otherwise well, with no fever, weight loss, night sweats, bruising, bleeding or jaundice. Examination confirmed concerning features of a firm, discrete, immobile mass measuring 4 cm in diameter. The location and examination features were treated as high-risk suggestive of malignancy, and the child was referred urgently via a suspected cancer pathway. Neck ultrasonography suggested the presence of a cervical rib, and chest radiography confirmed the presence of a prominent left cervical rib with a minor vestigial right cervical rib. This case highlights a structured approach to paediatric neck lumps in primary care, the importance of recognising red flag features warranting urgent referral and the importance of considering a cervical rib as a benign cause of a supraclavicular neck mass, despite cervical ribs often presenting incidentally.

Keywords: Cervical Lymphadenopathy, Neck Lump, Supraclavicular Mass, Cervical Rib, Malignant, Benign.

INTRODUCTION

Neck lumps are a common childhood presentation, with cervical lymphadenopathy being present in more than one-third of otherwise healthy children. Although most cases are benign and self-limiting, there is a broad differential to consider. Reactive lymph nodes secondary to viral upper respiratory tract infection are the most common cause [RCH, 2021]. Neck lumps that are supraclavicular in location, larger than 2 cm in diameter, and firm or fixed, require urgent evaluation as these features increase concern for malignancy and other serious pathology [Meier *et al*., 2014]. A very urgent specialist assessment within 48 hours is recommended by the National Institute for Health and Care Excellence in children and young people with unexplained lymphadenopathy when lymphoma is a concern [NICE, 2015]. Further guidance from the Children's Cancer and Leukaemia Group highlights the supraclavicular site as a reason to refer regardless of lymph node size [CCLG, 2021].

In addition to malignancy concerns, benign pathology may also occur in the supraclavicular fossa. The British Medical Ultrasound Society guidance notes that a cervical rib (CR) may present as a spurious, hard and immobile clinical mass in the supraclavicular fossa. A CR is an accessory rib arising from the seventh cervical vertebra [BMUS, 2024]. The prevalence of CR is considered underreported, as they are typically detected incidentally on plain radiographs or when associated with symptoms. Ipsilateral limb weakness, pain and numbness are features of thoracic outlet syndrome, which can present with CR [Henry *et al*., 2018].

CASE REPORT

A five-year-old female presented to a family medicine clinic with a recently noted painless lump in her left supraclavicular fossa on the background of having a self-limiting viral illness six weeks earlier. There were no systemic symptoms, including fever, weight loss, night sweats, fatigue, bruising, bleeding, shortness of breath, dysphagia, abdominal pain or jaundice.

On examination, a firm, non-tender, immobile, non-pulsatile mass was palpated in the left supraclavicular fossa measuring 4 cm in diameter. A thorough ear, nose, and throat, cardiovascular,

abdominal, and lymph node examination was otherwise normal.

On the basis of suspicious clinical features in light of paediatric referral guidelines, a malignant mass could not be excluded. The child was subsequently referred via a suspected cancer pathway, and a neck ultrasound was arranged to characterise the lump. A full blood count, liver function test and renal profile were also undertaken prior to referral.

The ultrasound scan suggested that the palpated abnormality was consistent with a cervical rib. In line with the British Medical Ultrasound Society guidance, a confirmatory radiograph was arranged [BMUS, 2024].

The chest radiograph was reported as:

> *"The chest x-ray confirms the presence of a left cervical rib, with just a minor vestigial right cervical rib, but the left rib is quite significant in size, and would be consistent with what is palpated and visible on the ultrasound examination. The chest and neck is otherwise entirely normal."*

The patient was discharged from the clinic with a safety net for symptoms suggestive of thoracic outlet syndrome (arm discomfort, paraesthesia, weakness, skin colour changes or swelling).

DISCUSSION

The causes of neck lumps in children are extensive and can be divided into developmental, inflammatory and infective, or neoplastic categories. Causes can be further refined by age and anatomical location [Meier *et al*., 2014; Chang *et al*., 2020]. Developmental lesions in the anterior triangle or midline of the neck include branchial cleft cysts, thyroglossal cysts, and dermoid cysts. Inflammatory and infective causes include reactive lymph nodes due to viral infection, acute bacterial lymphadenitis, and chronic infections such as Epstein-Barr virus (EBV) and Cytomegalovirus (CMV). Neoplastic causes include lymphoma, leukaemia and metastatic spread from childhood malignancy. Malignant nodes are likely to be firm, fixed, and non-tender, and the risk is increased by a supraclavicular location [Meier *et al*., 2014].

Approach to unexplained neck lumps:

Neck lumps of clinical concern should be initially evaluated with blood tests and ultrasonography.

A thorough blood work-up may include: Full blood count, Blood film, C-reactive protein, Erythrocyte sedimentation rate, viral serology (EBV, CMV), Toxoplasmosis, Quantiferon Gold (if TB concerns) and Lactate dehydrogenase. The testing panel selected should be directed by clinical suspicion after assessment. [Meier *et al*., 2014].

Ultrasonography is the initial imaging of choice for cervical lymphadenopathy [Chang *et al*., 2020]. However, the British Medical Ultrasound Society guidance emphasises the importance of clinical context, as ultrasound should not be used as a screening tool to exclude malignancy, as it cannot reliably differentiate between malignant and reactive lymph nodes [BMUS, 2024]. Ultrasonography does have a role in assessing for abscess formation and distinguishing solid from cystic lesions, whilst minimising ionising radiation [Chang *et al*., 2020].

Chest radiography can be helpful in assessing for mediastinal widening, especially when a lymphoma cannot be ruled out or when tuberculosis is considered [Chang *et al*., 2020]. Additionally, as in this case, radiography is a simple confirmatory test for bony variants such as CR.

Approach to a cervical rib:

A CR is an overdevelopment of the transverse process of the cervical vertebra, most commonly found at C7, but may also originate from C6 and C5. They are typically reported as unilateral and most commonly occur on the right side, with bilateral presentations being asymmetrical [Spadliński *et al*., 2016]. They are an important differential consideration in the evaluation of supraclavicular masses and can be detected on simple radiographs. Given the concern with supraclavicular presentations, it is sensible to adopt an early, urgent referral approach in such cases. As CR frequently occur in patients with thoracic outlet syndrome, it is recommended that asymptomatic patients should be counselled appropriately, so they can undergo prompt and appropriate treatment early. A delay in treatment can lead to neural compression, muscle atrophy, vascular compromise and loss of limb function [Henry *et al*., 2018].

CONCLUSION

A firm, fixed supraclavicular lump in a child should be treated as a red-flag presentation requiring an urgent referral and appropriate imaging. This case demonstrates good practice in escalating care in line with international guidance. The case illustrates the use of ultrasonography and radiography in confirming a benign cervical rib. Clinicians are encouraged to consider a broad differential by age and anatomical location, and consider the need for urgent referral based on the presence of red-flag features. If an asymptomatic cervical rib is confirmed, a strong safety net for thoracic outlet syndrome should be in place to enable early intervention.

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