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Silicone granuloma: a cause of cervical lymphadenopathy following breast implantation

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SUMMARY

We report a case of a 54-year-old woman with saline-based breast implants who presented to the ear, nose and throat neck lump clinic with a 2-week history of bilateral neck lumps. She was found to have multiple palpable cervical lymph nodes bilaterally in levels IV and Vb. The ultrasonography demonstrated multiple lymph nodes with the snowstorm sign and a core biopsy confirmed a silicone granuloma (siliconoma). This granuloma was likely caused by bleeding gel from the silicone shell of her saline-based implants. This case demonstrates the importance of bleeding gel from saline-based implants, in the absence of implant rupture. Thus, head and neck specialists should consider siliconomas as a cause for cervical lymphadenopathy in patients with saline-based breast implants.

BACKGROUND

Cervical lymphadenopathy can be caused by an array of different pathologies. These can be categorised into either benign (eg, systemic lupus erythematosus, Epstein-Barr virus, toxoplasmosis) or malignant (eg, lymphoma, metastatic disease).¹ A comprehensive history and examination is essential in elucidating the most likely diagnoses. Additionally, in high-risk patients, it is crucial to undertake appropriate investigations to rule out more sinister pathology such as head and neck cancers.

Breast implants are frequently used in both aesthetic and reconstructive breast surgery. They are composed of silicone shells filled with saline or silicone gel.² Numerous studies have examined the safety of such implants and demonstrated the potential for ruptures, malignancies and inflammatory reactions.^{3,4} Silicone-associated lymphadenopathy occurs following migration of silicone particles to regional lymph nodes. This can be a consequence of implant rupture, or when microscopic amounts of silicone gel leak from the outer shell (known as 'gel bleed'). The majority of cases result in axillary or mediastinal lymphadenopathy. There are very few reported cases of silicone associated cervical lymphadenopathy.^{5,6}

This case report both adds to the limited literature and emphasises the importance of considering silicone granulomas as a potential cause for cervical lymphadenopathy in patients with saline-based breast implants.

CASE PRESENTATION

A 54-year-old woman presented to the outpatient ear, nose and throat neck lump clinic with a 2-week history of multiple bilateral neck lumps. These

painless lumps had been progressively enlarging over a 2-week period. She had also been having episodes of night sweats but she felt these were related to her menopause. She had not noticed any other lumps around her body. She denied any weight loss and had no head and neck red flag symptoms or B-type symptoms. Additionally, she had no recent viral illness.

Thirteen years prior to presentation, she had bilateral breast augmentation with silicone-based implants. Three years following insertion, her silicone implants were recalled by the manufacturer and were replaced with saline-based implants. On removal, there was no evidence of implant rupture or leakage. She had no other relevant medical history. She was a non-smoker and consumed five units of alcohol per week.

On examination, she had multiple bilateral palpable lymph nodes in levels IV and Vb, more prominent on the left. A flexible nasoendoscopy and oral cavity examination were unremarkable. At this stage, the differential diagnosis included lymphoma, head and neck cancer, metastases and reactive lymphadenopathy secondary to infection.

INVESTIGATIONS

The patient subsequently underwent various blood tests including a *Toxoplasma gondii* and *Cytomegalovirus* screen. These were conducted since these two opportunistic infections often have mild clinical courses and are associated with generalised

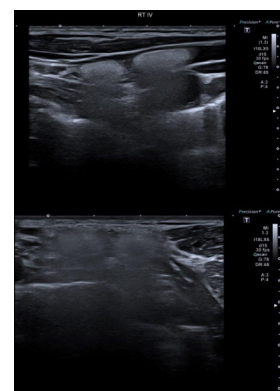


Figure 1 Ultrasonography of affected lymph nodes demonstrating the snowstorm sign ultrasonography demonstrating multiple enlarged lymph nodes with a heterogeneous echogenic pattern and dispersion of the ultrasound beam causing posterior acoustic shadowing (snowstorm sign). Features indicative of a silicone granuloma.



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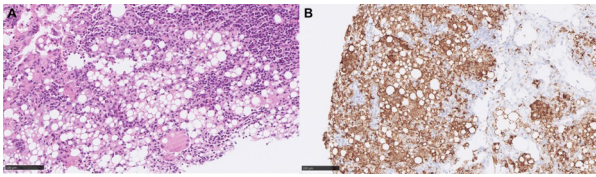


Figure 2 Photomicrograph of the silicone granuloma (A) Photomicrograph (magnification $\times 30$, H&E stain) demonstrating numerous empty vacuoles and multinucleate giant cells. The empty vacuoles previously contained silicone, which has been dissolved during preparation of the specimen. (B) Photomicrograph (magnification $\times 30$) confirms the specimen is CD68 positive, a marker of macrophages.

lymphadenopathy.⁷ Both these screens were negative for an acute infection.

The crucial investigation in this case was an ultrasonography guided biopsy of the lymph node. The ultrasonography (figure 1) demonstrated multiple mildly enlarged lymph nodes in levels IV and Vb bilaterally with the largest measuring up to 1.5 cm. There was a heterogeneous echogenic pattern with dispersion of the ultrasound beam causing posterior acoustic shadowing (snow-storm sign). A CT scan of the neck also confirmed the presence of bilateral small volume lymphadenopathy.

The core biopsy (figure 2) revealed lymph node tissue with macrophages containing large vacuoles, scattered lymphocytes and multinucleate giant cells. These findings were typical of a silicone granuloma and the silicone had most likely dissolved from the vacuoles while preparing the specimen.

OUTCOME AND FOLLOW-UP

Following discussion at the multidisciplinary team meeting (including the plastic surgery team), it was concluded that given saline-based implants are covered in a silicone shell, the lymphadenopathy was likely a consequence of gel bleeding. Subsequently, no further treatment was required. She currently remains well and has been reassured that this is not a malignant cause.

DISCUSSION

Silicone-associated lymphadenopathy occurs following the deposition of silicone in lymph nodes. Silicone can enter surrounding tissue following frank rupture of the implant or a ‘gel bleed’ from the outer silicone shell.^{8,9} These exposed silicone particles can subsequently migrate to regional lymph nodes through macrophages.¹⁰ Winer *et al* first described the histological features as a granulomatous foreign body reaction instigated by silicone particles. This results in the formation of giant cells and dense infiltration with plasma cells, lymphocytes and histiocytes.¹¹ This inflammatory response results in lymph node enlargement.

There are numerous reported cases of silicone lymphadenopathy occurring in the mediastinum and axilla^{8,9,12} but there are very few reported cases of silicone associated cervical lymphadenopathy.^{5,6,13} Additionally, it is equally rare for saline-based implants to result in regional lymphadenopathy and this case highlights the importance of silicone gel bleeding from the outer silicone lining. Thus, for head and neck specialists it is an important differential diagnosis to consider in patients with any breast implants (since they contain a silicone outer shell). As it stands, there are currently no guidelines for the management of silicone lymphadenopathy. However, implant integrity should be evaluated by a breast specialist.

With regard to the enlarged lymph nodes, the dilemma lies in whether to opt for excision or monitor. This is a decision that should be made alongside the patient highlighting the benefits and risks of removal. In this case, as the lymphadenopathy was not causing any issues (eg, compressive symptoms, recurrent lymphadenitis/infections) no further treatment from the otolaryngologist was required.

Overall this case report demonstrates a rare presentation of cervical lymphadenopathy caused by silicone gel bleeding from saline-based breast implants. This is an entity all healthcare professionals should consider when patients with breast implants present with regional lymphadenopathy.

Learning points

- ▶ Otolaryngologists should remember the importance of bleeding gel from the silicone shell of saline-based breast implants as a cause of cervical lymphadenopathy.
- ▶ If a silicone granuloma in the neck is identified, consider imaging of the breast implant to ensure integrity.
- ▶ The importance of taking a comprehensive history to identify the differential diagnoses.

Contributors ADR was involved in the creation and revision of the manuscript and acquisition of all figures and consent from the patient. YM was involved in the revision of the manuscript and interpretation of the radiological images. FS was involved in the creation and revision of the manuscript and was the designated otolaryngology consultant in this case.

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