Short reports

Silicone lymphadenopathy mimicking a lymphoma in a patient with a metatarsophalangeal joint prosthesis

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Abstract

With lymph node enlargement, the possibility of a malignant process such as metastatic carcinoma or lymphoma needs to be excluded. This report describes a 47 year old woman with inguinal lymph node enlargement initially suspicious for lymphoma. Fine needle aspiration findings favoured reactive hyperplasia, but a malignant process could not be excluded. The final histological diagnosis was a foreign body granulomatous inflammatory response as a result of regionally disseminated silicone particles from an overlooked metatarsophalangeal joint prosthesis. Because of the large number of joint prostheses worldwide, it should be kept in mind that migration of wear particles can create granulomatous inflammation and node enlargement.

Keywords: lymphadenopathy; silicone; prosthesis

Although complications associated with the use of joint prostheses are recognised in the orthopaedic literature, they are less well recognised by physicians in other specialties. The production of wear debris after arthroplasty has been widely reported and inflammatory responses to biomaterials are still described. Metal, silicone elastomers, and polyethylene are the biomaterials most commonly implicated. In tissues found adjacent to implants there is often a histiocytic reaction. Wear debris commonly disseminates to lymph nodes, whereas systemic dissemination with granulomatous reaction is less frequent. The same lymph node may harbour both granulomatous inflammation, as a result of wear particles, and metastatic carcinoma or lymphoma. Our present case draws attention to the fact that the possibility of lymph node enlargement as a result of silicone wear particles from a 15 year old arthroplasty was not elicited in the initial evaluation for lymphadenopathy.

Case report

A 47 year old woman presented in October 1997 with left inguinal lymph node enlargement. She denied any fevers, chills, or other systemic symptoms. The only finding on physical examination was an enlarged, non-inflamed, mobile lymph node. Since 1992, she had been receiving gold salts and non-steroid anti-inflammatory drugs for rheumatoid arthritis. She underwent a fine needle aspiration of the enlarged lymph node and reactive hyperplasia was favoured, but a malignant process could not be excluded. One year later, she noted an increase in the size of the lymph node. The lymph node was surgically excised and submitted for pathological evaluation.

The specimen consisted of a lymph node, approximately 25 mm in diameter, with a light tan appearance and a homogeneous consistency on cut section. The specimen was separated into several portions. One segment was fixed in formalin, embedded in paraffin wax, and processed for light microscopy and immunohistochemistry. Another portion was frozen. Another segment was processed for cytogenetic and flow cytometry evaluation. The formalin fixed sections were stained with haematoxylin erythrosin safron (HES), Giemsa, periodic acid Schiff, Perls, and for CD20, CD3 and BCL-2 (all from Dako, Glostrup, Denmark) using the streptavidin–biotin method. The frozen sections were stained with oil red O. There was no abnormality on cytogenetic examination and no monoclonality detected in flow cytometry. The histological examination showed follicular hyperplasia and numerous multinucleated foreign body giant cells within sinuses and interfollicular spaces (fig 1). The immunohistochemistry study

Figure 1 Lymph node with germinal centre surrounded by sinuses filled with numerous multinucleated foreign body giant cells containing refractile silicone particles (haematoxylin erythrosin safron stain; magnification, ×100).
showed normal compartmentalisation of B cells (mainly in the follicular centre) and T cells (in the interfollicular space). BCL-2 immunostaining showed negativity of the B cell population within the hyperplastic follicles. Many of the giant cells contained irregular particles of refractile material as well as asteroid bodies (fig 2). The particles showed a mean diameter of 24 μm; the largest measured particle was 40 μm in diameter. These particles were not doubly refractile under polarised light and special stains were negative. The histological appearance of these particles was suggestive of silicone, so we queried the patient about this possibility. She related that she had a left metatarsophalangeal joint prosthesis, which was placed 15 years ago for a bone deformity (hallux valgus). It was a Swanson silastic prosthesis, for which plain film radiographs did not reveal any evidence of damage.

Discussion

Silicone elastomer arthroplasties for joint diseases involving the small joints of the hands and feet have been used worldwide since the late 1960s. Medical silicones, or polydimethyl-siloxane, can be formulated in different ways, resulting in materials of varying structures and consistencies, which can be individually tailored for different body parts. For example, elastomers are used for joint prostheses, gel for breast implants, and liquid for soft tissue injection. As in joint prostheses, a local granulomatous reaction can be encountered for the different physical forms of silicone applied in medicine. In fact, such a reaction is found in breast and testicular implants as well as in subcutaneous injections. In such cases, it is important to realise that silicone leakage might be the cause of the lymphadenopathy, if it shows a foreign body giant cell reaction to particulate matter morphologically compatible with silicone elastomer. In our case, retrospective review of the original cytology slides failed to identify any pronounced pathology. With currently increasing numbers of silastic joint arthroplasties performed for rheumatoid arthritis or bone deformity, silicone lymphadenopathy should always be considered in the differential diagnosis of node enlargement. Uncommonly, there may be an associated malignant process. A review of the reports of concurrent malignant tumour cells and exogenous silicone particles in the same lymph node has shown that lymphoma is usually found with particles from joint prostheses, and carcinoma with particles from breast implants. All of the patients with both joint prosthesis related lymphadenopathy and non-Hodgkin's lymphoma had longstanding rheumatoid arthritis. Patients with rheumatoid arthritis are at an increased risk of developing malignant lymphoma, compared with the general population. They form the population most likely to be treated with Swanson joint implants. Therefore, the presence of silicone joint implants in patients with rheumatoid arthritis and lymphoma might be a concomitant rather than a causal finding. Similarly, follicular hyperplasia, as initially seen in the present case, is more likely to be a manifestation of rheumatoid arthritis than a response to foreign material.

The long term outlook in terms of foreign body reaction is reported to be very good, but the first reported case of silicone lymphadenopathy associated with a finger joint implant had a recurrence in an ipsilateral node four years later. Therefore, it is recommended that prostheses should be replaced if they result in pronounced lymphadenopathy as a result of migrating wear debris.
