DIAGNOSIS OF SILICONE LYMPHADENOPATHY

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SUMMARY

Foreign body granuloma, lymphadenopathy, and human adjuvant disease after implantation of foreign material may occur subsequent to injection of silicone / paraffin and possibly silicone polymers. Patients develop signs, symptoms, and laboratory abnormalities suggestive, but not diagnostic of a connective tissue or autoimmune disease. In this paper, a case who was injected silicone gel into the glabellar region for contour irregularities is reported. Treatment of silicone granuloma was managed by surgical excision, and silicone lymphadenopathy was diagnosed by use of fine needle aspiration biopsy technique. Possible mechanisms of human adjuvant disease due to silicone injection, and histopathologic changes at the injected site, as well as the lymph nodes which drain the injected site, are discussed.

Key Words: *Silicone, Silicone Lymphadenopathy, Fine Needle Aspiration Biopsy, Silicone Granuloma*

INTRODUCTION

It is reported that the search for injectable soft tissue substitutes began almost 100 years ago with the injection of paraffin into the scrotum to replace missing testicles by Gersuny (1). In the first two decades of this century, mineral oil, paraffine and similar oils, or waxes were used for a variety of purposes. Other soft tissue substitutes including bovine collagen, silicone fluid, autologous fat, or fibrel (a mixture of gelatin powder and the patient ' s own plasma) are in current use to varying degrees (1).

Silicones are synthetic polymers of dimetylpolysiloxane manufactured in a variety of physical forms ranging from a thin, watery liquid to hard plastic (2, 3) . Silicone fluid, known as medical grade 360, has been used in injectable forms. It is colorless and has a centristoke value of 200 , allowing it to pass through a narrow-gauge needle. Excellent early results in some cases were tempered by late development of browny induration in the subcutaneous tissue and thinning , discoloration and ulceration of the overlying skin (1 , 2). Ben-Hur (4) described the development , following silicone injection, of tumour-like formation similar to foreign body granuloma in rats. Orentriech reported neither local nor systemic allergic reactions, attributing local complications (dyschromia, granuloma, drifting and persistent erythema) to inappropriate technique and quantitative implantation factors (5). Other authors have reported significant early and late complications, including chronic induration, migration, and severe inflammatory reaction (1, 2).

CASE REPORT

A 40-year-old woman had undergone silicone injection into the glabellar region for deep furrows in 1991 elsewhere. Injected material was silicone gel taken from a breast prosthesis. In 1992, she noticed firmness, nodularity, induration, and tenderness, as well as right submandibular lymphadenopathy. She had undergone systemic corticosteroid and antibiotic therapy with moderate improvement. She had been operated twice for excision of silicone granuloma with no relief and her complaints recurred soon. She had no arthralgia and no systemic disturbances.

Physical examination revealed firmness and tenderness on the glabellar region and a 2 cm nontender, mobile, firm lymph node on the right submandibular region. The patient's rheumatologic work-up included ANA, RF, ESR, anti-DNA; all were found to be normal.

She underwent operation for total excision of the granuloma in the glabellar region and fine neddle aspiration biopsy of the submandibular lymph node. Unfortunately, her complaints recurred once again after about three months. Some relief has been provided by intradermal corticosteroid injection.

Histologic examination of the excised facial lesion revealed fibrous connective tissue infiltrated by histiocytes and granulomas. Epitheloid cells, foreign body giant cells, and small cystic spaces were seen within the granulomas (Fig. 1). The cystic spaces varied somewhat in size and appeared to contain residual droplets of silicone. Fine needle aspiration of the submandibular lymph node showed clusters of foamy macrophages having numerous vacuoles in their cytoplasms (Fig. 2). In the light of the clinical and above mentioned histopathologic findings, aspiration cytology of the lymph node was diagnosed as consistent with silicone related inflammatory reaction.

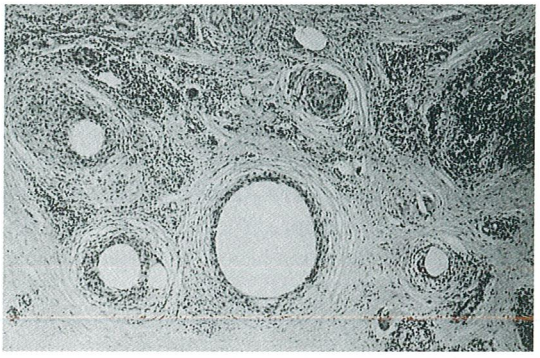

Fig - 1 : Histologic appearance of the silicone granulomas. HE X 200.

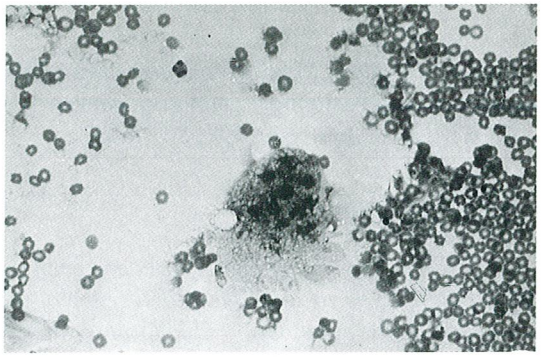

Fig - 2 : Clusters of the foamy macrophages. Papanicolaou X 500.

DISCUSSION

The first clinical silicone granuloma formation was reported in the American plastic surgery literature by Millard and Maisels (6). The complications of silicone injections include formation of foreign body giant cell-type granuloma, persistent edema, recurrent inflammation, persistent or recurrent pain, erythema, and even the development of draining sinuses. In 1985, Travis and Abraham (7) reported three cases and discussed the histopathologic differences of various silicones. The histologic reaction to silicone elastomer is different than to silicone liquids and gels, but this difference is yet unexplanied .

Long term complications caused by injected silicone gel and paraffin oils were investigated by Kubuta et al. (8) . Induration of the injected areas has been observed in 90 of the 103 cases. Swelling, redness and / or pain which recurred with intervals of several months to several years were observed in

100 of the 103 patients; 18 lapsed into general malasie, 17 had arthralgia and stiffness, 8 had high fever and 10 patients had lymphadenopathy. Four cases had collagen disease-like symptoms; i.e. tests for LE cells, antinucleer antibody and anti-DNA antibody were all positive. Human adjuvant disease or autoimmune disease after implantation of foreign material occurs subsequent to injection or implantation of silicone, paraffin, or possibly silicone polymers.

There have been many theories on the etiology of human adjuvant disease. First is the release or shedding of silica from hardened silicone following implantation. The biological irritability and antigenic potential of silica have been well documented. Second is the possible conversion of silicone to silica following macrophage phagocytosis. The documented effects of silica on the immune system include the development of autoantibodies and connective tissue disease. A third possibility is that the silicone microparticles act as hapten-like substance and combine with other molecules to form an antigen complex (9).

Silicone lymphadenopathy defined as the presence of silicone in a lymph node is a rare side effect of mammary augmentation either by injection of liquid silicone or by placement of a bag-gel prostheses. The development of either dentritic synovitis or silicone lymphadenopathy appears to be a late complication of silicone joint prostheses. Physical examination of our patient revealed a lymph node in right submandibular region after two years. We believe that liquid or gel silicone injection is more prone to migrate to lymph nodes than elastomer or hard silicone. Mitnick (10) reported sterotactic fine neddle aspiration biopsy to be a reliable technique to evaluate breast mases in six patients with augmentation mammoplasties. The aspirates yielded multinucleated macrophages with cytoplasmic vacuolization. Malignant cells were present in none of the patients.

The cytological and histological findings in our patient are similar to those reported in the literature, and we conclude that fine neddle aspiration biopsy technique may be a reliable procedure in the diagnosis of both silicone granulomas and silicone lymphadenopathy.

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