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SHORT COMMUNICATION

Treatment of skin necrosis after radiation synovectomy with yttrium-90: a case report

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Abstract Chronic synovitis, unresponsive to systemic medical therapy including agents, anti-inflammatory drugs and remission-inducing agents, and intra-articular administration of corticosteroids can be treated with surgical, chemical and radiation synovectomy. We reported a case of a 23 years old male. Skin radiation necrosis (4 × 5 cm) developed after an injection of Yttrium-90 (Y-90). Full-thickness skin graft had been applied but we were not able to succeed. Skin radiation necrosis was treated with Limberg's flap. As a result we recommend flap surgery instead of skin graft in skin radiation necrosis.

Keywords Synovitis · Radiation synovectomy · Yttrium-90 · Skin radiation necrosis · Limberg's flap

Introduction

Chronic synovitis, unresponsive to systemic medical therapy including agents, anti-inflammatory drugs and remission-inducing agents, and intra-articular administration of corticosteroids can be treated with synovectomy [1]. Radiochemical synovectomies have been used for nearly 50 years for the treatment of persistent monoarticular synovitis refractory to anti-inflammatory drugs, disease-modifying drugs, and intra-articular corticosteroids. It is a therapeutic alternative to surgical synovectomy [2].

We report a skin radiation necrosis, which was treated with Limberg's flap.

Case report

The patient was a 23 years old man. He had pain and swelling in his right knee. Flexion of the right knee was 100° and extension was limited to 10°. MRI and arthroscopic biopsy showed chronic synovitis. Radioactive synovectomy was applied with Y90. Skin necrosis (4 × 5 cm) occurred at the site of injection (Fig. 1). Full thickness skin graft was applied 2 months after intra-articular injection. But necrosis did not heal. Skin necrosis was treated with Limberg's flap after 1 year (Figs. 2, 3; [3]).

Discussion

Skin necrosis is an important complication after intra-articular Y-90 injection. Intra-articular injection of Y-90 and most other radioactive drugs must be given carefully by experienced orthopedic surgeons. If radiation skin necrosis occurs, the therapeutic choice is hyperbaric oxygen or flap surgery [4, 5]. We preferred flap surgery to hyperbaric oxygen, because we do not have hyperbaric oxygen at our centre.

Jacobs [6] reported that in three cases of the 38-case series, there was evidence of minor pigmentation at the injection site. Two cases had extravasation of the isotope and needle track ulcers, which were recorded as major toxicity.

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Fig. 1 Skin radiation necrosis after Y-90 intra-articular injection

Fig. 2 Intraoperative appearance of Limberg's flap

Jahangier [7] reported that short-term side effects occurred in two cases after two Y-90 injections (2%) without glucocorticoid co-administration: a post-injection flare-up of synovitis and a local skin burn lesion.

Sojan [8] reported that this procedure demonstrated one of the potential complications in a 46-year-old man treated with bilateral radiation synovectomy for hemophilic synovitis. Cutaneous radiation necrosis is a known, but rare, complication of this procedure and this case is reported to demonstrate this known complication and to highlight that appropriate technique is required to avoid this. There was a

Fig. 3 Skin radiation necrosis was treated with Limberg's flap

skin radiation necrosis treated with Limberg's flap in our 21-case series.

As a result, we recommend flap surgery instead of skin graft when skin radiation necrosis develops after radiation synovectomy.

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