

# Intralesional 3% Sodium Tetradecyl Sulfate for Treatment of Cutaneous Kaposi's Sarcoma

Jee Young Kim, Ji Seok Kim, Myung Hwa Kim, Byung Cheol Park, and Seung Phil Hong

Department of Dermatology, College of Medicine, Dankook University, Cheonan, Korea.

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Corresponding author: Dr. Seung Phil Hong,  
Department of Dermatology,  
College of Medicine, Dankook University,  
201 Manghyang-ro, Dongnam-gu,  
Cheonan 330-715, Korea.  
Tel: 82-41-550-6485, Fax: 82-41-552-7541  
E-mail: zamoo97@naver.com

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Kaposi's sarcoma is an angioproliferative disease thought to have originated from endothelial cell lineage, and it is classically described as a multipigmented sarcoma appearing on the lower extremities of elderly men.<sup>1</sup> Radiation therapy is commonly used, and other treatment modalities include topical immune response modifiers, systemic chemotherapy, and surgical excision. Recently, the use of pegylated liposomal doxorubicin has shown potential for preventing the appearance of Kaposi's sarcoma with less complication.<sup>2</sup> However, these treatments can induce severe complications, impairing patients' immune systems. The application of imiquimod 5% cream also revealed good treatment response, but the rate of overall side effects was more than 50%.<sup>3</sup>

Because most affected patients are elderly or immunosuppressed, a well-tolerable therapy should be preferred. Sodium Tetradecyl Sulfate (STS) causes endothelial surface damage, which in turn induces an inflammatory reaction that leads to sclerotization of vessels.<sup>4</sup> It also causes less complication than other systemic treatments, and is lower in cost and easier to handle.

A 96-year-old woman presented with hard, violaceous indurated plaques and protruded erosive papules on right dorsum of foot and ankle (Fig. 1A) which was diagnosed as Kaposi's sarcoma by biopsy. Human papilloma virus 8 was detected by PCR, and her laboratory tests revealed negative in HIV antibody. Due to her old age, local treatment was started instead of chemotherapy or aggressive operation.

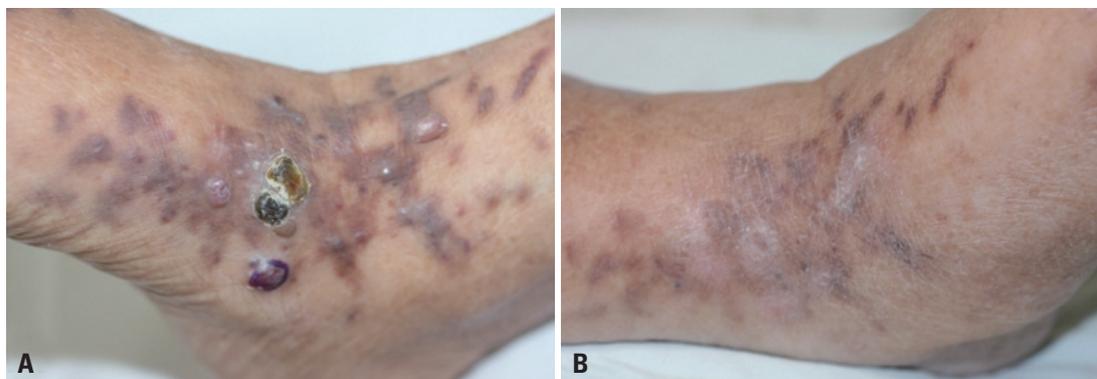
Intralesional injection of 3% STS (0.2 mg/mL) was performed on nodules 7 mm or less in size and on plaque lesions. Total volume of 0.024 mg per 1 cm<sup>2</sup> was injected. The idea of using 3% STS was based on the histological similarities of Kaposi's sarcoma with other vascular diseases.<sup>1</sup> The 3% STS-injected lesions showed immediate changes in color from purple to black, so we continued using only the 3% STS for all of the nodular lesions every month. Using the solution on plaque lesions also showed good response, although there were some pigmented patches left. After 6 treatment sessions, the lesions showed definite shrinkage without any complications (Fig. 1B).

STS at low concentration is effective in stripping endothelium and commonly used in the treatment of varicose and spider veins of the legs, for it is also able to induce a hypercoagulable state. There are some case reports about intralesional treatment with vincristine, while only a few physicians tried 3% STS as a treatment modality on Kaposi's sarcoma, in which it was mostly intraoral. According to the literature, vincristine, a cytotoxic agent, showed better complete remission rate than sclerosing agents, but also showed higher rate of no reaction to mild re-

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**Fig. 1.** The gradual improvement of Kaposi's sarcoma on the right ankle and dorsum of foot after treatment. (A) Before treatment. Regardless of the size, all nodular lesions and plaque lesions were treated with 3% STS. (B) After 6th cycle of intralesional injection of 3% STS. STS, Sodium Tetradecyl Sulfate.

sponse. STS showed higher rate of partial remission than vincristine, causing 50% to 75% of regression.<sup>1</sup> Both solutions showed similar rates of pain and ulceration, which lasted only a few days. Moreover, STS is much easier to obtain and handle in dermatology out-patient departments than vincristine, which is very expensive and difficult to deal with. In practice, topical immune response therapy is also an alternative treatment. In a single center study with imiquimod 5% cream reported overall 47% response rate (2 complete and 6 partial response) after 24th week, and 53% of patients (9 of 17) with tolerable adverse effects. Other reports of two classic type Kaposi's sarcoma reached complete remission with different application methods.<sup>5</sup> Although imiquimod cream could regress the lesion with good tolerance, self-applied imiquimod could increase the risk of irritation in elderly people. In addition, STS has the benefit of a shorter treatment duration according to references.<sup>1,4</sup>

The accurate injection of STS into the target is easy in nodular Kaposi's sarcoma. However, in patch and plaque Kaposi's sarcoma, the treatment is difficult because of many vascular slits without true endothelial linings. Meanwhile, the cutaneous skin is thicker and consisted of more keratin materials compared with mucosa, so the injection into cutaneous lesions could be harder than mucosal Kaposi's sarco-

ma. Moreover, STS is a palliative drug, which means that the medical efficacy is lower than anticancer medicine.

Although intralesional injection of 3% STS is a palliative management, our case indicates that the sclerosing agent is an effective alternative drug for the treatment of Kaposi's sarcoma lesions.

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