Tranilast as an Additional Treatment with Conservative Therapy for Concave Deformity Following Traumatic Hematoma

Mitinari Muraoka, Shinobu Ayabe, Teruichi Harada, and Hisashi Motomura
Osaka, Japan

Abstract. Fibrotic scar tissue resulting from a cheek hematoma sometimes seriously contracts to form a concave deformity, despite conservative therapy. We used Tranilast as an additional treatment with conservative therapy for four patients who were resistant to massage and compression therapy. Four months after oral administration of Tranilast, all the deformities were resolved. Tranilast is used for the treatment of allergic diseases and keloids. It inhibits the release of transforming growth factor β-1, interleukin-1 β, and prostaglandin E2. It also suppresses collagen synthesis by fibroblasts.

Key words: Tranilast—Concave deformity—Keloid—Hypertrophic scar

In areas where there are thin subcutaneous tissues between the skin and the bone, such as the cheek, subcutaneous hematoma often occurs following bruises. Subsequent fibrotic scar tissue replaces it gradually, in accordance with absorption of the hematoma. This fibrotic tissue sometimes contracts seriously to form a concave deformity despite conservative therapy. We used Tranilast, which is effective in resolving keloids, in addition to conservative therapy for four patients who were resistant to the ordinary therapy. Two cases are reported and discussed.

Case Reports

Case 1
A 9-year-old boy bruised his left cheek when playing on a jungle gym. On the eighteenth day after the injury, he came to our hospital with no apparent clinical treatments. Although X-ray examination revealed no facial bone fractures, he suffered a large subcutaneous hematoma on his cheek. We taught him and his parents a massage maneuver for during the day and compression therapy with a sponge-pressing technique for during the night to accelerate absorption of the hematoma and to prevent subsequent concave deformity.

On the thirtieth day the swelling of his cheek had become quite small, but a concave deformity was apparent, with palpation revealing hard, contracted fibers (Fig. 1). Tranilast (150 mg/day, Kissei Pharmaceutical Co, Japan) was administered orally while the conservative treatments mentioned above were continued. This concavity decreased gradually and disappeared after four months of oral administration.

Case 2
A 2-year-old boy bruised his left cheek when he fell down the stairs (Fig. 2). Two months after the injury, he came to our hospital because of a concave deformity in the left cheek. Tranilast (150 mg/day, Kissei Pharmaceutical Co, Japan) was administered orally while the conservative treatments mentioned above were continued. This concavity decreased gradually and disappeared after four months of oral administration.

Discussion
The cheek is vulnerable to hematoma caused by several traumatic forces. This hematoma is gradually
replaced by granular tissue made of many collagen fibers. This subcutaneous scar tissue sometimes seriously contracts to form the concave deformity, despite several conservative treatments. The conservative treatments we use are: compression therapy [3] to accelerate absorption of hematoma, and massage therapy to prevent contraction of granular tissue [1]. Most patients have good clinical results, but some suffer concave deformity despite the strategies mentioned above.

We used Tranilast (5 mg per kg per day) for four cases that were resistant to the ordinary conservative therapy described above. The chemical name of Tranilast is N-(3,4-dimethoxycinnamoyl)anthranilic acid. It is approved by the Health and Labor Ministry of Japan and is used for the treatment of allergic diseases and keloids [5]. This anti-allergic drug inhibits the release of substances such as histamine and prostaglandin from most cells [4]. It also inhibits the release of transforming growth factors β-1, interleukin-1 β, and prostaglandin E$_2$ from human monocytes/macrophages, and inhibits collagen synthesis by fibroblasts, leading to the suppression of keloid and hypertrophic scars. With regard to collagen contraction, a recent report mentioned that Tranilast also significantly reduced restenosis rates after directional coronary atherectomy [2].

![Fig. 1. A 9-year-old boy with a concave deformity on his left cheek. (A) Before oral administration of Tranilast. (B) After four months.](image)

![Fig. 2. A 2-year-old boy with a concave deformity on his left cheek. (A) Before oral administration of Tranilast. (B) After four months.](image)