Scalp edema: don't forget sunburn in children

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Scalp edema is an uncommon and striking finding in children that may alarm both parents and physicians. The objectives of this case report were to raise awareness among pediatric emergency physicians of the unusual presentation of sunburn as scalp edema. We present the case of an eight-year-old boy with sunburn of the head, presenting with scalp and face edema. Pitting edema and erythema were dominant on the forehead. Shaving of the boy's head the day before the symptoms was the most striking issue, and the sunburn healed gradually without any complications. Healthcare professionals should be aware of this condition, and the diagnosis of sunburn must be kept in mind in otherwise healthy-looking patients with a unique history.

Key words: scalp, edema, sunburn, children, emergency.

Head shaving is popular among the new generation of boys. However, it may render children unprotected against dangerous sunlight especially when exposed to sun without a protective cap, particularly in extreme temperatures. Due to the unique nature of the scalp, sunburns may present differently than in other areas of the body. Herein, we report an eight-year-old boy who admitted to the emergency department with an unusual presentation of sunburn.

Case Report

An eight-year-old boy presented to the pediatric emergency department suffering from headache and scalp edema. His symptoms developed after riding a bicycle in the sun without a protective cap for 4 hours continuously from 11:00-15:00. A burning sensation was felt on the head along with headache and scalp edema. His vital signs were: blood pressure: 90/60 mmHg, temperature: 36.6°C; respiratory rate: 24/min, and pulse: 86/min. The physical examination was completely normal except for pitting scalp edema. His family and personal history were uneventful. His parents stated that he had shaved his head the previous day and played with his friends outdoors on a very hot and sunny day. He was admitted to another outpatient clinic and received methylprednisolone as an anti-edema treatment. His symptoms of edema and erythema had partially resolved after the steroid treatment. However, the scalp edema worsened overnight and swelling became more prominent in his face, eyelids and forehead. Probably due to the effect of gravity, an unusual appearance was noticed by his anxious parents and he was admitted to our emergency department (Fig. 1). He was suspected to have subgaleal hemorrhage, although there was no head trauma history, and his cranial computed tomography (CT) revealed subepidermal soft tissue swelling. Laboratory studies including a complete blood cell count with differential, erythrocyte sedimentation rate (ESR), liver and kidney function tests, and urine analysis were all within normal limits. He was treated with simple analgesia overnight. His physical examination performed the next day showed remarkable reduction in the edema and erythema with a superficial sunburn. His lesions completely resolved in a gradual manner within a few days. His parents were warned about the harmful effects of the sun, and the importance of sunblock agents such as caps and protective creams was highlighted.

Discussion

Acute scalp edema is a striking finding that may alarm both parents and physicians. Head trauma with or without an underlying

Fig. 1. Swelling and erythema on the patient's frontal region and face.

skull fracture is the most common cause of generalized or localized scalp edema. Subgaleal hemorrhage is rare but also an important cause of scalp edema in children. It may be associated with coagulation disorders, subaponeurotic vascular malformations and pulling hair. Subgaleal hemorrhage results in the accumulation of blood between the skull periosteum and galea aponeurotica. The diagnosis is generally made clinically, with a fluctuant boggy mass developing gradually over the scalp. The swelling frequently crosses suture lines. Imaging studies such as CT scan and magnetic resonance imaging may assist in the diagnosis[1,2]. Scalp edema, particularly along with facial edema, is an uncommon finding of Henoch-Schönlein purpura (HSP), although the diagnosis of HSP is based on clinical features including palpable purpura, abdominal pain, arthritis, and renal involvement; skin edema is well recognized in HSP. If the scalp edema is localized, hematoma, benign or malignant bone tumors, osteomyelitis, and other infectious etiologies should also be considered in the differential diagnosis. Another unusual cause of localized scalp swelling is eosinophilic granuloma, which is a localized form of Langerhans cell histiocytosis[3-5].

The most informative feature in our patient's history was his exposure to sunlight with a newly shaved head for a reasonable period of time the day before the symptoms began. It was one of the hottest days in the last decades in Ankara, with the temperature reaching 42°C (107.6°F). After excluding other differential diagnoses such as head trauma and HSP, the diagnosis of sunburn causing scalp edema was made. Verma et al.[6] reported for the first time three children who were diagnosed with sunburn on the scalp, similar to our patient, who also had a similar history. They concluded that scalp edema due to sunburn in children is an unusual finding and can cause unnecessary investigation[6].

Sunburn is the acute reaction of the skin to damage by ultraviolet (UV) light exposure. Approximately 95% of UV light reaching the earth is UVA, which is responsible for aging and skin degeneration. The remaining UV light, which comprises less than 5%, is UVB, and is responsible for edema and erythema by increasing vascular permeability of blood vessels in the upper dermis. The symptoms of sunburn include erythema, edema blistering, ulceration, and pain, which may start 3-5 hours after exposure, last for 12-24 hours, and generally start to dissipate by 72 hours after exposure[7]. The history of our patient was consistent with the natural course of sunburn-related injury, and his symptoms completely resolved within a few days.

Along with the important and life-threatening causes of scalp edema, such as head trauma and HSP, sunburn may be related to scalp edema rarely, especially in children exposed to sunlight while unprotected on extremely hot and sunny days. Therefore, parents and caregivers must be educated about sunblock and clothing. Healthcare professionals should be aware of this condition, and the diagnosis of sunburn must be kept in mind in otherwise healthy-looking patients with a unique history to avoid unnecessary testing and intervention.

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