

Benign Subcutaneous Emphysema Following Punch Skin Biopsy

Sir,

A 45-year-old woman, clinically diagnosed as a case of disseminated discoid lupus erythematosus was

admitted in dermatology in-patients. A punch biopsy was performed from the lesion present over the dorsum of the right hand. About 18 h later, she complained of

a diffuse swelling involving the back of the right hand that extended rapidly to involve the entire forearm until elbow joint in next 5-6 h. It was associated with mild discomfort and no systemic symptoms. Examination revealed a diffuse swelling involving the dorsum of the right hand around a loosely sutured punch biopsy wound and the forearm. A diffuse crackling (crepitus) was palpated over the swelling. There was no evidence of accompanying foul smelling discharge, other local signs of inflammation, discoloration, bulla formation or necrosis. Radiograph of the hand and forearm revealed the presence of gas in a linear fashion in the subcutaneous tissue [Figure 1]; however, there was no gas in the deeper tissues. Ultrasound also confirmed the same findings. Pus culture for aerobic as well as anaerobic organisms was sterile. Thus, a diagnosis of benign subcutaneous emphysema (SE) was made. We removed the suture and decided to keep patient on conservative management. Next day onwards, the swelling started decreasing and resolved completely by the 4th day.

The word emphysema arises from ancient Greek language and means "to blow in."^[1] SE is an entity rarely encountered in dermatology literature.^[2,3] SE is a condition, in which air or other gases penetrate the skin and sub mucosa resulting in soft-tissue distension. Surgical emphysema may either be traumatic, iatrogenic or spontaneous. A sudden and dramatic swelling appears on the cutaneous surface due to leakage of air into the skin and subcutaneous tissue. The acute onset and a distinct crackling sound (crepitus) upon palpation, characterise this entity.^[3] Large amount of free air entering and spreading along the deep fascia and subcutaneous tissue along the path of least resistance due to a ball-valve mechanism has been proposed as a possible mechanism in such cases of SE following skin biopsy.^[4]

SE may be a benign or a potentially lethal condition. The most serious cause of SE is gas gangrene, which has a history of preceding trauma and causes extensive destruction of tissue. It presents with a sudden onset swelling with foul smell and systemic signs and symptoms. Culture from tissue material and blood culture is positive for *Clostridium* species. It shows no spontaneous recovery and is a potentially fatal condition without treatment.

Benign, non-infectious SE is a post-traumatic condition. Trauma may be due to: (1) iatrogenic manoeuvres performed in emergency and intensive care settings, such as positive pressure ventilation or endotracheal intubation; (2) perforation of the pulmonary or digestive tracts;^[5] (3) blast and air-gun injuries; (4) dental extraction; and (5) dermatologic conditions.^[4] SE has also



Figure 1: Lateral view radiograph of the hand showing soft tissue swelling involving the dorsum of hand with radiolucent shadow of entrapped subcutaneous air (arrow)

followed cases of irrigation of wounds with hydrogen peroxide or as a result of cryotherapy.^[6] Benign SE resolves spontaneously as in the present report and treatment involves management of the underlying cause, if persistent.

Sudden appearance of swelling following a simple office procedure such as punch biopsy, may be an alarming sign to a resident, but proper examination and investigations may help to ascertain the diagnosis of benign SE; a self-limiting entity.

Pravesh Yadav, Deepika Pandhi, Archana Singal

*Department of Dermatology and STD,
University College of Medical Sciences and GTB Hospital,
University of Delhi, Dilshad Garden, Delhi, India
E-mail: archanasingal@hotmail.com*

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