Dear Editor,

Epidermal cysts arise mostly from the infundibular portion of the hair follicles. They appear every site of the body, especially on the face, scalp, neck and trunk (1). They originate rarely in areas without hair, such as the sole and palm. They are seen more frequently on a hand than on the foot (2). The epidermal cysts on the palms and soles are easily confused with warts or calluses. This misdiagnosis may lead to inappropriate treatment (3). Obstruction of hair follicles and implantation of epidermal fragments into the dermis from a penetrating or blunt injury have been considered as causes of common epidermal cysts (4).

A 31-year-old healthy woman presented with complaints of swelling on her right sole and pain during walking. The patient sustained sharp-pointed glass injury 2 years earlier. On examination, a soft tissue mass, firm, round, movable, 1.8 cm in diameter and overlying the first web was detected by palpation on the plantar side of the right foot (Figure 1). On the foot x-rays no bone or soft tissue lesion was detected. Surgical excision was performed to the patient. A white cystic wall with white exudate was extirpated and closed primarily (Figure 2, 3). Histopathological analysis revealed a stratified squamous epithelium structure similar to that of the skin and a clear granular layer (Figure 4). The diagnosis of an epidermal cyst was made. There were no signs of recurrence after the 5-month follow-up time period.

Epidermal cysts on the sole and plantar epidermal cysts are pointed out to occur following traumatic implantation of epidermal elements into the dermal layers. Laceration, incision or skin puncture has the potential to implant and causes production of keratin and other epidermal products in the dermis and subcutaneous tissue (5). In some studies patients had no clear history of trauma or treatment (skin transplantation, cryotherapy for a wart.) (6, 7).

As in our patient, repeated loading on areas such as the sole that tend to undergo chronic loading can also be a reason. Lemont reported that varus-functioning feet are common at young ages and the lateral sides of the feet are more convenient to the shearing force that induces epidermal implantation (8).
Cases secondary to HPV infection have been reported. According to a hypothesis, HPV may have a high affinity for eccrine duct epithelium, infect the distal portion of the eccrine duct, and then migrate into its dermal portion, finally leading to the formation of an epidermal cyst (9). In the present case, cyst wall did not show any histological changes suggestive of HPV infection such as vacuolated structures and intracytoplasmic eosinophilic inclusions. In addition, we performed p16 immunohistochemically to evaluate the possible association between HPV infection and this case. HPV infection was not detected in the cyst wall cells.

Plantar epidermal cysts should be differentiated from trichilemmal cysts, calluses, warts, lipomas, fibromas, neuromas and bony and arthropathic swellings (3). Trichilemmal cyst displays specific keratinization without a granular layer. Callus is an area of painless, hard and hyperkeratotic skin. Wart has an exophytic growth and is characterized by foci of clear vacuolated cells which are found in stratum granulosum. Callus and wart are seen over pressure points (10). If the cyst size is large, there may be a possibility of malignant transformation. Basal cell carcinoma, squamous cell carcinoma and Bowen’s disease must be taken into consideration in the differential diagnosis (11). In this patient, histopathological examination excluded any malignancy.

Clinical examination and the history of associated trauma is enough to clinch the diagnosis. The imaging studies (X-Ray, ultrasonography, MRI scan) may be helpful as a part of comprehensive evaluation. Fine needle aspiration cytology (FNAC) is a useful and convenient technique for the diagnosis if enough keratin or sebaceous material is obtained. Histologically, the cyst wall is composed of keratinized stratified squamous epithelium and the cyst cavity is filled with keratinous materials. Foreign body reaction or calcification may be seen (12). There was no epidermoid cyst rupture in our case.

Although, the sole is an area without hair, the epidermal cyst should be in the list of differential diagnosis for plantar lesion of the foot. For proper treatment to soft tissue mass of the sole, careful dissection is a must to avoid the recurrence and the risk of damage to the underlying neurovascular structures.

References


