Squamous Cell Carcinoma Arising in an Epidermal Inclusion Cyst

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An epidermal inclusion cyst is a widespread benign intradermal lesion and may occur anywhere in the body. Normally, it appears as a non-tender, soft mass of variable size. Dissection usually reveals grayish-white or whitish gelatinous materials and a smooth inner surface. The overlying skin almost always shows unremarkable changes. On occasion, the cyst may rupture and induce an inflammatory reaction. It rarely turns malignant or displays a firmer mass. This study reports on a rare case of squamous cell carcinoma arising from the lining cells of an epidermal inclusion cyst, which was located in the left axillary region of a 68-year-old male patient. Clinically, it is difficult to differentiate between a benign and malignant cystic lesion. Histological examination normally yields the diagnosis. Once a diagnosis is confirmed, the tumor should be widely excised with a free margin. The outcome is always excellent. We therefore emphasize that all resected skin cystic specimens should undergo further microscopic examination to avoid any unnecessary misdiagnosis. *(Chang Gung Med J 2002:25:279-82)*

Key words: epidermal inclusion cyst, squamous cell carcinoma.

An epidermal inclusion cyst (also referred to as an infundibular cyst or epidermoid cyst) is the most common type of cutaneous cyst. It differs from a trichilemmal cyst (also called a pilar or "sebaceous" cyst), the second-most-common cutaneous cystic lesion, by its gradual keratinization through the intermediate formation of the granular cell layer. A carcinoma arising in a preexisting epidermal inclusion cyst or sebaceous cyst is uncommon. The literature has estimated that the prevalence of these tumors ranges from 0.033% to 9.2%.[1] Among them, squamous cell carcinoma is considered to be the most frequent, followed by basal cell carcinoma.[2] There is no gender or racial predisposition, and all ages may be affected. In this article, we report on a patient with a left axillary epidermal inclusion cyst which underwent a malignant change 2 years after the initial detection of the lesion.

CASE REPORT

A 68-year-old male patient, admitted to our hospital on June 20, 2000, had had a mass in his left axillary region for 2 years. The lesion had enlarged considerably 1 month prior to admission. Physical examination revealed a bulging, mobile, painless mass, measuring 4 cm in diameter. The overlying skin appeared normal. Total excision of the tumor, including the elliptical covering skin, was performed smoothly under local anesthesia. The patient appeared comfortable and was discharged immediately.

Gross examination revealed an elliptical patch of skin measuring 6.5 ¡ 4.5 cm with an underlying attached nodular lesion measuring 4.5 cm in diameter. The overlying skin appeared intact. The under-

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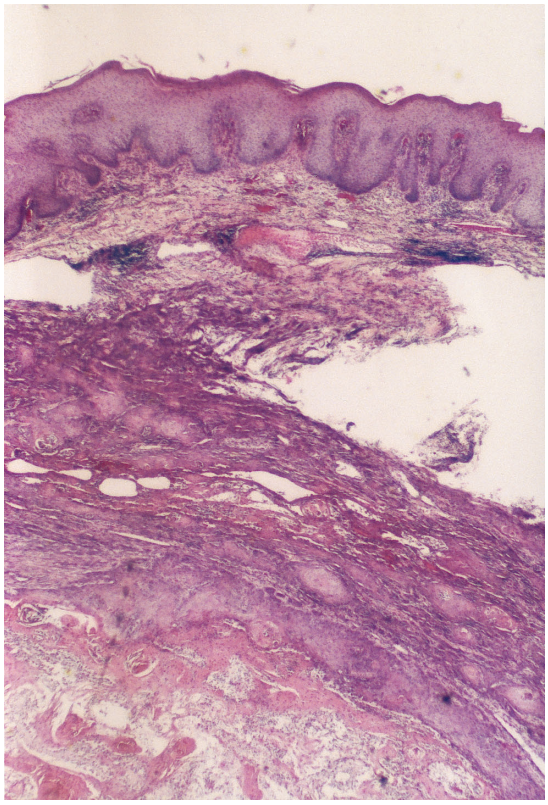

Fig. 1 The covering epidermis of the skin (upper) and the underlying lesion of epidermal inclusion cyst (bottom) are demonstrated. Nests or sheets of neoplastic cells are shown within the stromal tissue in between them. The lumen of the cyst contains numerous dyskeratotic cells with abundant amount of eosinophilic keratin flakes. (H & E stain, ¡ 25)

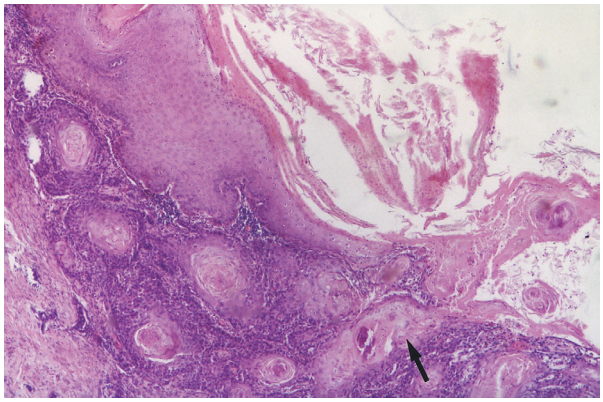

Fig. 2 Photomicrography illustrating a squamous cell carcinoma arising from the lining epithelium of an epidermal inclusion cyst. The transformation zone (arrow) can be identified. Prominent keratin formation and infiltrating anastomosing sheets of neoplastic cells are shown. The stroma reveals dense plasmalymphocytic infiltrate. (H & E stain, ¡ 50)

lying tumor was slightly firm on palpation. When bisected, the cut surface displayed a cystic lesion containing much gelatinous material. The tumor corresponded to a typical picture of an epidermal inclusion cyst. However, the surrounding tissues of the cystic lesion appeared grayish, firm, and friable.

Microscopically, neoplastic cells were noticed next to the epidermal inclusion cyst (Fig. 1). These cells seemed to arise from the overlying squamous epithelium of the cyst (Fig. 2). The malignant cells were arranged in infiltrating anastomosing sheets, nests, or clusters. Prominent keratin pearl formation, individual dyskeratotic cells, and intercellular bridges could be identified. The tumor cells contained round to oval, vesicular to hyperchromatic nuclei with conspicuous nucleoli and frequent mitotic figures. Plasmalymphocytic cells had densely infiltrated the stroma, which revealed fibrotic changes. The neoplastic cells had invaded the surrounding fibroadipose tissues. However, a free zone connected the overlying non-neoplastic skin epidermis and the infiltrative malignant cells. The surgical margins were free. These features indicated a lesion of well-differentiated squamous cell carcinoma arising in a preexisting epidermal inclusion cyst.

DISCUSSION

In normal clinical practice, one would not usually suspect squamous cell carcinoma arising in an epidermal inclusion cyst. The lesion is almost always removed and diagnosed after microscopic examination. Surgeons and dermatologists can easily misdiagnose the lesion as a benign cyst.[3]

In 1980, Bauer and Lewis compared 8 large series of examined cyst patients and discovered that there were 72 carcinomas noted among 3300 cases, with an incidence rate of 2.2%.[2] However, the true incidence is difficult to assess since many patients are incompletely examined or the excised skin cystic lesion is not further examined microscopically.[4] No gender predilection has been noted. Ages range from the early teens to more than 80 years, with a marked

increase in the fifth decade and older. The tumor appears to grow slowly. Its tendency for malignant change increases when cystic lesions are neglected for a long period. Repeated traumatic injury also elevates the incidence of malignancy.[5] Over 90% of lesions were diagnosed microscopically as well-differentiated squamous cell carcinomas. According to Bauer and Lewis, only 5 cases had metastasized to other sites. Among them, 2 were poorly differentiated carcinomas. Basal cell carcinoma is the second-most-common skin tumor after squamous cell carcinoma that arises in an epidermal inclusion cyst.[2]

In most cases, tumors appear above the shoulders, including the skull and forehead.[6-8] Other locations, including a finger subjected to repeated trauma,[5] have also been reported.

Persistent chronic irritation, such as a repeated traumatic mechanism to the cystic lining cells, is sometimes suggested as the reason for the pathogenesis of the lesion, resulting in dysplastic changes and finally an invasive carcinoma.[5]

A common clinical feature corresponding to malignant cystic lesions is the persistent rigidity of the tumor with a subcutaneous mass of variable hardness that may be fixed to the skin or underlying tissues.[2] Other clinical symptoms include a failure to resolve following incision and drainage, or a tendency to recur after tumor excision.[2,9] In addition, a few cases may develop ulceration of the covering surface.[2] Otherwise, they cannot be distinguished clinically from benign inclusion cysts. Moreover, clinical examination is further complicated by an inflamed and hardened mass that may simulate or obscure a carcinoma.[5] Most of the excised specimens grossly display a cystic lesion with focal firm and infiltrative borders, in which the cut surfaces are grayish or whitish and may contain gelatinous materials.[6-8]

A diagnosis from microscopic examination determines the presence of infiltrative malignant cells arising from the lining epithelium of a cyst. In some cases, a transitional zone from benign to malignant changes may be identified. The neoplastic cell usually contains round to oval nuclei with distinctive nucleoli. Its cytoplasm is always abundant, and mitoses occur frequently. In most cases, these lesions demonstrate keratin pearl formation, individual dyskeratotic cells, and an intercellular bridge, indicating the typical features of a well-differentiated squamous cell carcinoma.[2,5-7] Only a few cases display poor differentiation.[8]

As mentioned above, the patient reported herein complained of a chronic subcutaneous mass in his left axillary region. The preoperative gross finding was consistent with an epidermal inclusion cyst. However, the postoperative microscopic examinations disclosed a well-differentiated squamous cell carcinoma. Thorough serial sections were taken and a transformation zone was finally identified (Fig. 1).

Primary practical treatment for a non-neoplastic cystic lesion is excisional biopsy. However, if a malignant lesion is suspected, a wide surgical excision with an adequate margin remains the mainstay of treatment.[7] Incision or incomplete excision is not recommended, especially for a recurrent cyst.[2] The histological grading and extension of the main tumor should be carefully assessed. These 2 features affect the decision to further excise the contiguous structures.[2] There is no evidence that a tumor is prone to recur after wide local excision.

Not all inclusion cysts are routinely excised because of infrequent malignancy in these lesions. Furthermore, not all excised cysts are sent to the laboratory for detailed examination. Since clinical manifestations do not readily indicate a malignancy in skin cystic lesions, excised cysts must be carefully examined histologically, particularly if rapid enlargement has been noted.

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源自於上皮囊腫之鱗狀上皮細胞癌

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上皮囊腫是一種相當普遍的良性眞皮病變，可發生於身體之任何部位。通常切開後可見凝膠狀的內容物與光滑的內表面。囊腫可能因破裂而引起發炎反應。偶而，它也會引發癌病變，形成較硬的腫瘤。本篇提出一例罕見的個案，其左腋下的上皮囊腫合併出現鱗狀上皮細胞癌的病理變化。臨床上，要區分是否出現惡性病變之上皮囊腫並不容易。一般而言，經由組織切片檢查方可獲得正確的診斷。一旦診斷確定後，該腫瘤需做廣泛且完整的切除，如此，才能有良好的預後。因此，我們要特別強調所有切除下來之上皮囊腫皆應送檢組織切片檢查，以避免發生不必要之誤診。(長庚醫誌 2002;25:279-82)

關鍵字：上皮囊腫，鱗狀上皮細胞癌。

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