A Case of Benign Fibrous Histiocytoma on Herpes Zoster Scar: Wolf's Isotopic Response

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"Isotopic response" is a term for the occurrence of a new skin disorder at the site of another, unrelated, and already healed skin disorder. Herpes zoster is the most common disease as a first skin disorder, and various diseases have been reported as secondary skin disorders. The pathogenic mechanism of this phenomenon is still unknown, and there are several hypotheses about this. The patient was an eight-year-old male with a small nodule on the chest wall. The lesion had developed on the same site as the healed herpes zoster scar. It was confirmatively diagnosed as a benign fibrous histiocytoma based on histopathologic examination and immunohistochemical results. We herein present a case of benign fibrous histiocytoma on the same site as the healed herpes zoster scar, as a case of isotopic response. (Ann Dermatol 16(3) 134~137, 2004)

Key Words: Benign fibrous histiocytoma, Wolf's isotopic response

INTRODUCTION

In 1995, Wolf et al defined the term, "isotopic response" as the occurrence of a new skin disorder at the site of another, unrelated, and already healed skin disease[1]. In addition, the new skin disorders must appear at the site of an already healed skin disease, that is, the first disease should have no activity and the skin should look normal or clinically have a minimal scar. Moreover, the first and second diseases should be restricted to skin diseases that are not the result of exposure to exogenous agents, such as chemicals, irradiation (ultraviolet or x-rays), or other external traumas[1]. In the literature, the most common first disease is herpes zoster, with the following skin diseases being reported as the second disease: granuloma annulare[2], granulomatous vasculitis[3], metastasis of breast cancer[4], squamous cell carcinoma[5], basal cell carcinoma[5], angiosarcoma[6], leukemia[7] lymphoma[8], lichen planus[9], dermatophytosis[10], genital wart[11]. The pathogenic mechanism of this phenomenon is not understood yet. Recently, Ruocco et al. support the hypothesis that some neural alteration might be the first step, with subsequent impairment of immunological function, and that viral and vascular mechanisms may only be cofactors in certain cases[12]. We present the case of a boy with benign fibrous histiocytoma (BFH) on herpes zoster scar.

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CASE REPORT

An 8-year-old boy presented with a small nodule on the chest wall. It had grown slowly for the past one month, and there was a scar-like looking plaque on the base of the lesion. His general health was good. His medical history included herpes zoster on the right chest, T2 dermatome, which had successfully been treated with oral antiviral agent four months ago, with only slight scars remaining on the anterior chest wall. The patient had a solitary, brownish, dome-shaped, small (<0.5 cm), round, firm and mild tender nodule on the chest wall (Fig.

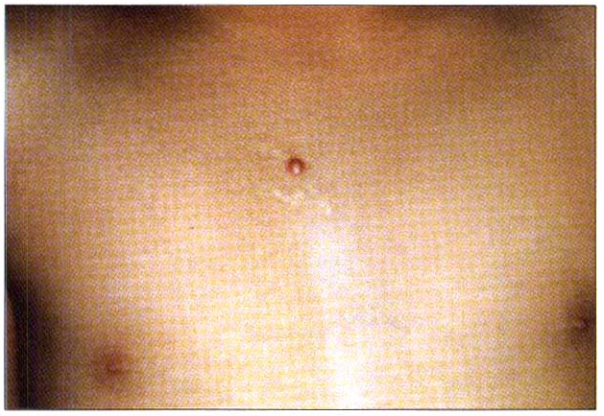

Fig. 1. A solitary, brownish, dome-shaped, 0.5 cm sized nodule on the anterior chest wall. Light brownish plaque-shaped post herpes zoster scar can be seen beneath this lesion.

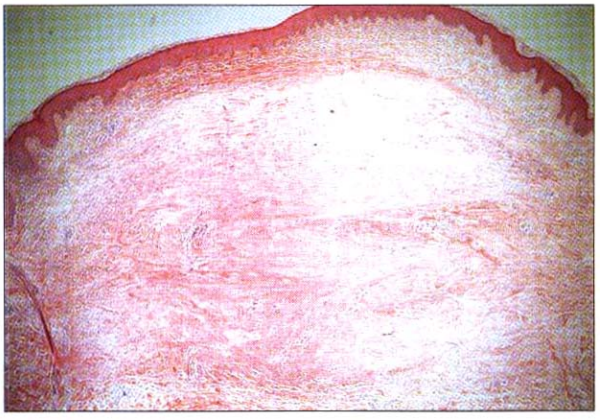

Fig. 2. Histopathologic examination reveals a relatively well-circumscribed dermal tumor mass. Mild epidermal hyperplasia, which is more prominent in the peripheral area, is noted. The tumor cells show partial storiform arrangement. (H&E, original magnification × 40).

1). Lateral compression of the lesion produced a dimple-like depression in the overlying skin. An excision biopsy was performed for confirmative diagnosis of the new skin lesion. On histopathologic examination, there was mild degree of epidermal hyperplasia, which was more prominent in the peripheral area. In the dermis, there was a relatively well-circumscribed tumor mass composed mainly of fibroblast-like spindle cells with storiform arrangement. The epidermis and dermis were distinctly separated by a narrow clear zone (Fig. 2 and 3). The tumor cells showed factor-XIIIa positivity and an absence of immunostainings for CD34 and CD68. After excision biopsy, no sign of tumor recurrence was found during a 4-month follow-up period.

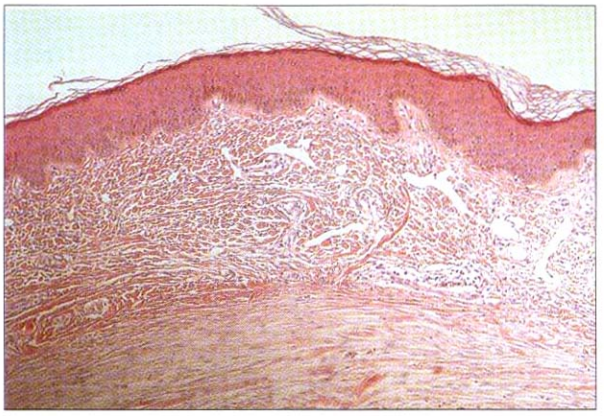

Fig. 3. The epidermis is separated by a clear zone (so-called Grenz zone) from the dermal tumor. The tumor is mainly composed of fibroblast-like spindle cells (H&E, original magnification × 100).

DISCUSSION

Benign fibrous histiocytoma (BFH) is the most common mesenchymal growth of the skin due to unknown origin and has a predilection for the lower legs of young women[13]. It is characterized by usually asymptomatic, small (0.5 mm to 1 cm in diameter), firm and mobile nodule. The surface may be shiny or keratotic, and the color is usually brown, sometimes with a play of colors[13]. The term "dimple sign" is for the depression created over a BFH when it is grasped gently between thumb and forefinger[14]. Although the pathogenesis of BFH is still controversial, some authors recognize that BFH is a reactive fibrosing and inflammatory process[15]. But the recent demonstration of chromosome abnormalities, in at least some cases of BFH, supports a neoplastic nature[16].

In our case, the histopathologic findings are not consistent with typical BFH, because there was no prominent epidermal hyperplasia with elongation of rete ridge (so-called "dirty finger sign"), which is a valuable finding for the diagnosis of BFH[17]. But we diagnosed the lesion as BFH based on its clinical features, histopathologic findings, such as a dermal tumor composed of spindle cells with storiform arrangement, the presence of a clear zone (so-called

"Grenz zone"), and the immunostaining results. There was no severe cellular pleomorphism, atypical mitoses, nor multinucleated giant cells, which are the findings of atypical fibroxanthoma[17]. We concluded that the cause of weak epidermal hyperplasia was that the lesion had been developed not in the normal skin but in the scar tissue, and that more prominent epidermal hyperplasia in the peripheral area, near to the normal skin, can be interpreted as the dirty finger sign, as above comment, a considerable clue for the diagnosis of BFH.

The major challenge for our case is whether the occurrence of BFH on herpes zoster scar was a coincidence. BFH seldom occurs in children[14], and trauma such as insect bites and vaccinations, have been thought to induce some BFHs[13]. It can be suggested that the localized altered secretions of neuropeptides from damaged nerve fibers in herpes zoster scar may influence the microenvironment to stimulate this fibrosing tumor formation in the more susceptible scar tissue. The clinical picture of our case suggests the isotopic response at the site of healed herpes zoster scar.

In addition, we found some reports about malignant fibrous histiocytoma occurring on thoracotomy and burn scars[18-21]. Because these cases are not adequate to the definition of isotopic response, they cannot be included as other examples.

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