Post-zoster Granuloma

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We present a patient who developed granuloma in a previous herpes zoster scar (post-zoster granuloma). The development of granuloma in healed herpes zoster lesions may represent an atypical delayed hypersensitivity reaction to viral antigens or tissue antigens altered by the virus. To our knowledge, this is the first case reported in Korean literature.
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Key Words : Delayed hypersensitivity reaction, Post-zoster granuloma

Many cutaneous reactions are known to occur within resolved herpes zoster lesions. These include granuloma annulare, sarcoidal granuloma, tuberculoid granuloma, pseudolymphoma, lymphoma, Kaposi's sarcoma, granulomatous vasculitis and non-specific granulomatous dermatitis[1-9].

The pathogenesis of these reactions remains unclear. It has been proposed they may represent isomorphic responses[2], or a delayed hypersensitivity reaction induced by varicella-zoster virus(VZV) antigen[1] or tissue antigen altered by the virus[3]. The presence of viral DNA in the lesions was inconsistently described[1,8,9].

We report a case of post-zoster granuloma with the result of a polymerase chain reaction(PCR) using specific primers for VZV to detect the presence of VZV DNA.

CASE REPORT

A 56-year-old woman who had a 15-year history of diabetes mellitus developed an asymptomatic nodular lesion in a previous herpes zoster scar. The nodule was pea-sized, skin-colored and firm in consistency(Fig. 1). Three months earlier, she was admitted to our department due to herpes zoster of the right trunk involving T9 and T10 dermatomes. She was treated with intravenous acyclovir and the lesion was resolved uneventfully. The nodule was totally excised and a histopathological examination revealed chronic granulomatous inflammation in the upper dermis and around the hair follicles(Fig. 2). The infiltrating cells were mainly histiocytes and multinucleated giant cells, lymphocytes and some plasma cells. However, collagen degeneration or mucin deposits were not found(Fig. 3). There was heavy perivascular inflammatory cell infiltration, but no actual vasculitis(Fig. 4). Thus, we diagnosed it as post-zoster granuloma and performed PCR for the presence of VZV DNA in the lesion using a specific primer[10] and appropriate positive and negative controls. The result of the PCR showed negative signals.

DISCUSSION

Of cutaneous eruptions at sites of healed herpes zoster(summarized in Table 1), granuloma annulare(GA) appears to be the most common lesion[1-3]. GA is a common benign inflammatory skin disease of unknown etiology. It has been reported following insect bites, sun exposure and local trauma, and occasionally has been associated with diabetes[2]. Although our patient suffered from diabetes, her lesion was not GA both clinically and histopathologically.

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Table 1. Cutaneous lesions within resolved herpes zoster lesions

Granuloma annulare	Granulomatous dermatitis not classified
Sarcoidal granuloma	Nodular solar degeneration following herpes zoster[11]
Tuberculoid granuloma	Post-zoster eosinophilic dermatosis[12]
Lymphoma	
Pseudolymphoma	
Kaposi's sarcoma	

The interval between the resolution of herpes zoster and the appearance of cutaneous lesions is relatively short, ranging from 2 weeks to 4 years(average : 6 months). In our patient, it was about 3 months.

The pathogenesis of these lesions is unknown. Some have proposed an isomorphic response (Koebner phenomenon). It may be true in GA and Kaposi's sarcoma which have a propensity to occur in sites of injury of inflammation. Wolf et al.[13]

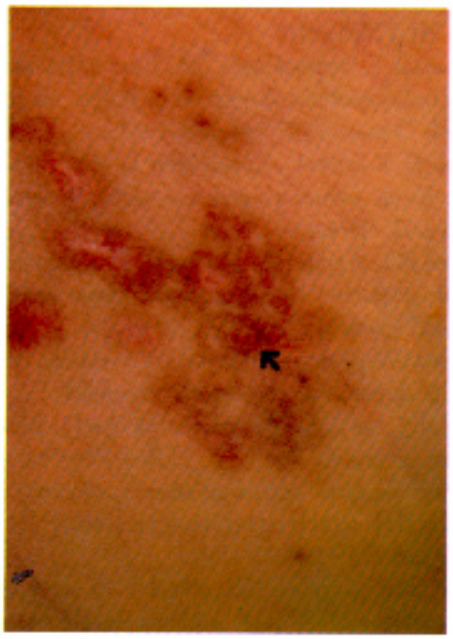

Fig. 1. A small nodule in a previous herpes zoster scar(arrow).

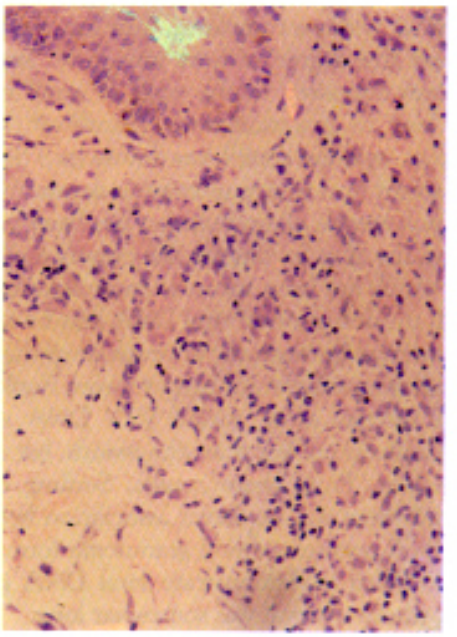

Fig. 3. The infiltrating cells are histiocytes, multinucleated giant cells and lymphocytes. Collagen degeneration or mucin deposit is not found(H&E, ×200).

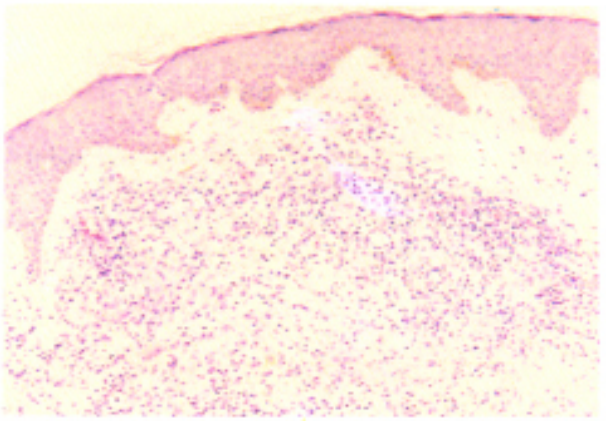

Fig. 2. Chronic granulomatous inflammation in the upper dermis(H&E, ×100).

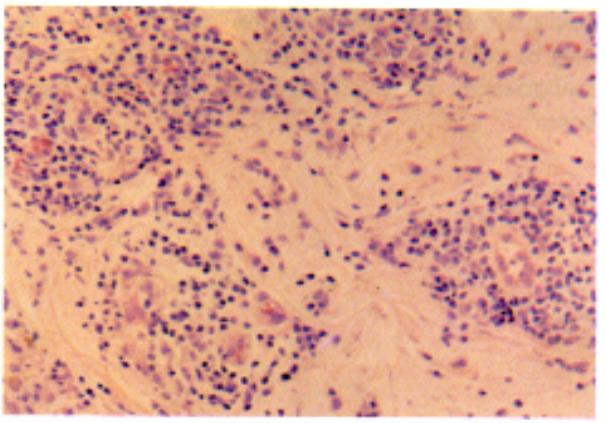

Fig. 4. Heavy perivascular inflammatory infiltration without actual vasculitis(H&E, ×200).

suggested a new term 'isotopic response' that they coined and defined as the occurrence of a new skin disorder at the site of another which is unrelated and already healed skin disorder. Others postulated that these reactions may be interpreted as the result of an atypical delayed hypersensitivity reaction to VZV antigen or a tissue antigen altered by the virus[1,3]. Even after the virus has been cleared from the involved sites, minute amounts of viral proteins may persist and induce a variety of histopathological changes, depending on the presence within immune complexes, their location in the skin, and the degree of host immunity. Immune complexes deposited in the walls of small vessels might lead to granulomatous vasculitis8. If the antigen or immune complexes diffuse into the dermis, it might lead to granulomatous dermatitis[9].

The polymerase chain reaction has been used to examine the skin lesions for the presence of VZV DNA, which has been inconsistently described. In general, the detection of viral DNA may be related to the interval between the appearance of the reaction and the resolution of herpes zoster. Serfling et al.[9] and Gibney et al.[1] found VZV DNA in the early granulomas of less than one month, but not in later lesions. From these results, Serfling et al.[9] suggested there was no direct association between VZV DNA persistence and granuloma formation. We also failed to demonstrate viral DNA in our patient whose interval was somewhat long.

As cutaneous reactions do not mean actual viral infection, antiviral therapy is no longer effective. Instead, various forms of corticosteroids are often tried with variable results[1,7,8].

Most post-zoster eruptions are self-limiting, but histopathological examination of these lesions may be very important because some of them reveal malignancies such as lymphoma and Kaposi's sarcoma[6,7].

REFERENCES

1. Gibney MD, Nahass GT, Leonardi CL: Cutaneous reactions following herpes zoster infections: report of three cases and a review of the literature. Br J Dermatol 134:504-509, 1996.
2. Packer RH, Fields JP, King LE Jr.: Granuloma annulare in herpes zoster scars. Cutis 34:177-179, 1984.
3. Friedman SJ, Fox BJ, Albert HL: Granuloma annulare arising in herpes scars. J Am Acad Dermatol 14:764-770, 1983.
4. Bisaccia E, Scarborough DA, Carr RD: Cutaneous sarcoid granuloma formation in herpes zoster scars. Arch Dermatol 119:788-789, 1983.
5. Roo E, Villegas C, Lopez-Bran E, et al.: Postzoster cutaneous pseudolymphoma. Arch Dermatol 130: 661-662, 1994.
6. Aloi FG, Appino A, Puiatti P: Lymphoplasmacytoid lymphoma arising in herpes zoster scars. J Am Acad Dermatol 22:130-131, 1990.
7. Niedt GW, Prioleau PG: Kaposi's sarcoma occuring in a dermatome previously involved by herpes zoster. J Am Acad Dermatol 18:448-451, 1988.
8. Langenberg A, Yen TSB, LeBoit PE: Granulomatous vasculitis occuring after cutaneous herpes zoster despite absence of viral genome. J Am Acad Dermatol 24:429-433, 1991.
9. Serfling U, Penneys NS, Zhu WY, et al.: Varicella-zoster virus DNA in granulomatous skin lesions following herpes zoster. J Cutan Pathol 20:28-33, 1993.
10. Rubben A, Baron JM, Grußendorf-Conen E-I: Evaluation of a new primer pair for rapid detection and strain differentiation of HSV-1, HSV-2 and VZV by PCR. J Invest Dermatol 106:914- , 1996.
11. Yamamoto T, Yokoyama A: Nodular solar degeneration following herpes zoster. Br J Dermatol 134:606, 1996.
12. Mitsuhashi Y, Kondo S: Post-zoster eosinophilic dermatosis. Br J Dermatol 136:465-79, 1997.
13. Wolf R, Brenner S, Ruocco V, et al.: Isotopic response. Int J dermatol 34:341- 349, 1995.