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Case Report

Pityriasis rosea following influenza (H1N1) vaccination

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Abstract

Pityriasis rosea is a distinct papulosquamous skin eruption that has been attributed to viral reactivation, certain drug exposures or rarely, vaccination. Herein, we reported a clinicopathlogically typical case of pityriasis rosea that developed after the H1N1 vaccination. With a global H1N1 vaccination program against the pandemic H1N1 influenza, patients should be apprised of the possibility of such rare but benign skin reaction to avoid unnecessary fear. Furthermore, a brief review of the current reported skin adverse events related to the novel H1N1 vaccination in Taiwan is presented here.

Keywords: Adverse reaction; H1N1 vaccination; Pandemic; Pityriasis rosea

1. Introduction

Pityriasis rosea (PR) is an acute, self-limited, papulosquamous skin eruption that occurs most commonly among teenagers and young adults.[1] Typical clinical presentation is the appearance of the primary herald patch followed by the onset of secondary scaly skin eruptions characteristically distributed along the skin tension line within days to weeks.[2] Although PR is a well-known and relatively common disease, its cause is still not completely understood. We report a case of PR occurring after H1N1 vaccination. This case may offer an example of possible skin adverse reaction associated with this "new vaccine" and in addition raise issues about the etiopathogenesis of vaccination-associated PR.

2. Case report

A 25-year-old male presented to our dermatology clinic for evaluation of a skin rash on his trunk and proximal limbs which had been present for two weeks. The patient described that a herald skin lesion was spotted initially in his left upper thigh followed several days later by the onset of many itchy scaly lesions on his trunk and proximal extremities. The first herald patch developed five days after he underwent H1N1 vaccination (AdimFlu-S (A-H1N1), Adimmune, Taichung, Taiwan). There were no systemic symptoms such as fever, malaise, myalgia or loss of appetite. He had no history of egg allergies, recent infection or drug exposure. He also denied any personal or family history of similar skin eruptions. On physical examination, the herald patch on his left upper thigh showed a 3-cm oval thin plaque with a central, wrinkled, erythematous area and a salmon-colored peripheral zone. There was a fine collarette of scale inside the peripheral zone (Fig. 1). The secondary eruptions were numerous, discrete, 1–3 cm in diameter, oval to round, salmon-colored plaques with similar collarette of scale that looked like the primary herald patch in miniature. The distribution of these secondary plaques was along the lines of cleavage that assumed a Christmas tree pattern on the patient's trunk (Fig. 2). Skin biopsy obtained from one trunk lesion demonstrated patchy parakeratosis, reduced granular cell layer, mild acanthosis and mild spongiosis. The superficial dermis revealed slight papillary edema, perivascular and superficial dermal interstitial infiltrate of lymphocytes and histiocytes (Fig. 3). The diagnosis of PR was made because of the typical clinicopathologic features. He was

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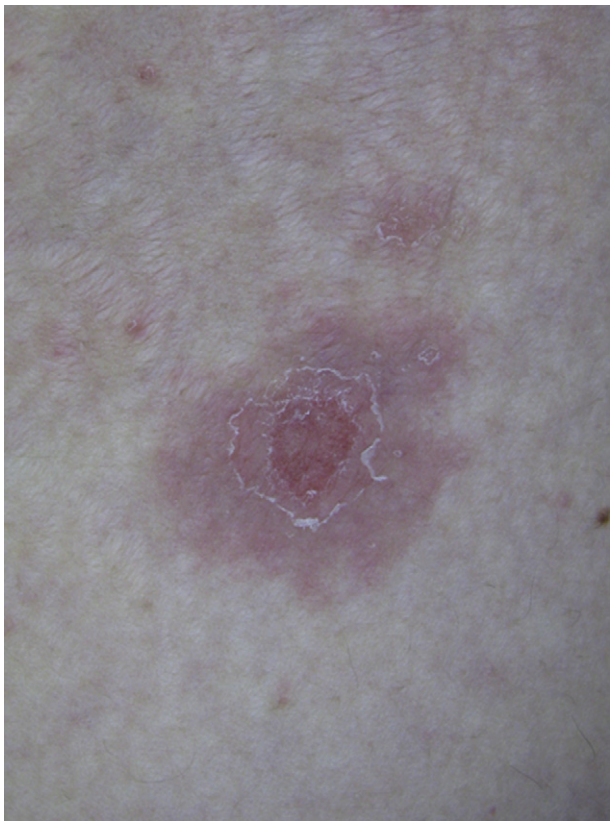

Fig. 1. A herald patch on the left upper thigh demonstrated an oval to round central, wrinkled, erythematous area and a salmon-colored peripheral zone. Inside the peripheral zone, there was a fine collarette of scale.

treated with oral antihistamine and mid-potency topical steroid cream. At the scheduled 2-week follow-up visit, the itch symptoms as well as the skin lesions were improved.

3. Discussion

Influenza is a highly infectious respiratory disease that may potentially cause considerable morbidity and mortality in high risk populations. The outbreak because of a new strain of influenza A virus subtype H1N1 began in the state of Veracruz, Mexico in early 2009. In response to the ongoing global flu pandemic, the Taiwan Central Epidemic Command Center has conducted a mass vaccination program since November 1, 2009. The number of individuals receiving H1N1 vaccination in Taiwan had reached 5,641,315 as of February 8, 2010, with 24% coverage of the total population.[3]

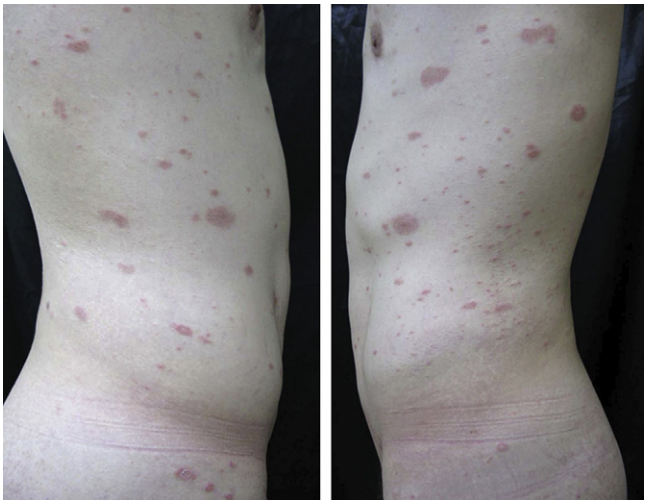

Fig. 2. Secondary plaques along the lines of cleavage on the trunk.

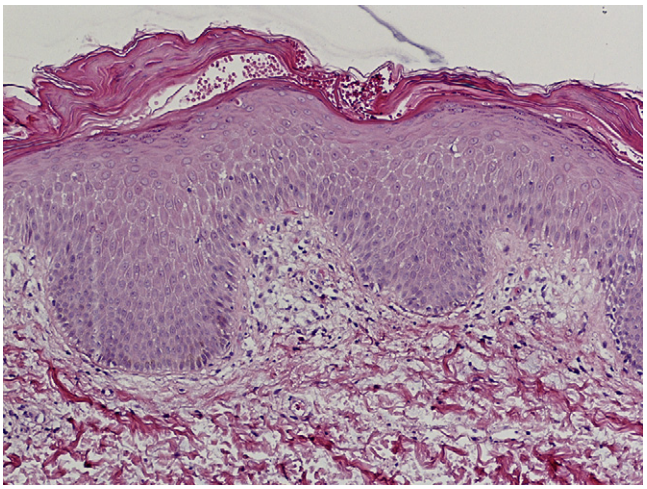

Fig. 3. The histopathologic findings of the lesional biopsy showed patchy parakeratosis, reduced granular cell layer, mild acanthosis and mild spongiosis. The superficial dermis revealed slight papillary edema, perivascular and superficial dermal instersitial infiltrate of lymphocytes and histiocytes. (Hematoxylin and eosin. Original magnification ×100).

We analyzed the data retrieved from the Taiwan Centers for Disease Control of suspected H1N1 vaccine-related adverse events weekly summary reports database dated from November 1, 2009 to February 4, 2010.[4] The total number of suspected adverse events attributed to H1N1 vaccination was 1247. Among them, the skin adverse events comprised 260 cases, which was around 21% of the total reported adverse events (Table 1). The most commonly reported solicited adverse events in other clinical trials were injection site reaction such as pain or erythema.[5] Unlike the data reported from other countries, the most reported adverse skin reaction in Taiwan was unspecified skin rash, comprising 53.8%, followed by injection site reaction, which reached 19.6%. The lower incidence of injection site reaction in Taiwan may result from the underreporting of these minor events. The incidence of both urticaria and angioedema was approximately 14%. The remaining skin adverse events were the minority, including unspecified pruritus, mouth ulceration, exfoliative rash, vasculitis, cellulitis, blister or vesicular rash, herpes infection, ecchymosis, petechiae, skin discoloration, alopecia, folliculitis and unspecified dermatitis. No serious adverse skin reactions such as Stevens-Johnson syndrome or toxic epidermal necrolysis had been reported so far.

PR is an acute, self-limited skin disease characterized by distinct cutaneous eruptions; namely an oval, salmon-colored, scaly herald patch followed by a secondary phase manifesting as similar smaller rose- or salmon-colored scaling patches

Table 1
Statistical data of suspected vaccine-related skin adverse events after H1N1 vaccination from Taiwan Centers for Disease Control dated from November 1, 2009 to February 4, 2010

	Number of cases reported	Percentage (%)
Unspecified skin rash	140	53.8
Injection site reaction (reported as erythema, swelling, induration, cyst, mass formation, injection site pain, pruritus and anesthesia)	51	19.6
Urticaria	19	7.3
Angioedema (including orbital, auricular, lip, facial edema)	18	6.9
Unspecified pruritus	5	1.9
Mouth ulceration	4	1.5
Exfoliative rash	4	1.5
Purpura	4	1.5
Vasculitis	3	1.2
Cellulitis	2	0.77
Blister or vesicular rash	2	0.77
Herpes virus infection	2	0.77
Ecchymosis	1	0.38
Petechiae	1	0.38
Skin discoloration	1	0.38
Alopecia	1	0.38
Folliculitis	1	0.38
Unspecified dermatitis	1	0.38
Total number of cases reported	260	–

distributed symmetrically on the trunk and limbs in a typical Christmas tree pattern (a unique pattern with their long axes along the cleavage lines of the skin).[2] The genuine pathogenesis of PR remains obscure. However, more and more scientific research has implicated that reactivation of human herpesvirus 6 (HHV-6) and human herpesvirus 7 (HHV-7) may contribute to the development of acute skin lesions. These studies were critically appraised by Drago et al. in a recent large review and concluded that a causative association seemed likely.[6] Numerous precipitating factors have been identified as triggering the occurrence of PR. Among them, the most commonly known are stress, acute illness, immunosuppressive state such as UV exposure or pregnancy.[7] Furthermore, several drugs were incriminated for inducing PR-like rashes, such as captopril, gold, barbiturates, isotretinoin, metronidazole, clonidine, ergotamine, terbinafine, omeprazole, and tyrosine kinase inhibitors.[2,8–11] As with the case reported herein, PR may develop after vaccination. PR eruptions have been reported after smallpox, diphtheria, Bacille Calmette-Guérin, pneumococcal and hepatitis B virus vaccinations.[12–16] In our case, the patient had neither any of the aforementioned precipitating factors nor recent drug exposure before the skin eruptions. Furthermore, the skin rash developed within one week of vaccination: a causal relationship was therefore highly suggested in our patient. The precise mechanism leading to PR after vaccination is unknown. However, the reported cases have driven the hypothesis that vaccination-induced immune stimulation may trigger the reactivation of latent infectious agents such as HHV-6 or HHV-7 and subsequently the PR develops owing to the reactivation of viruses. Another possible mechanism is cell-mediated immune response related to a molecular mimicry with a viral epitope, although there is currently no evidence to support such theory. Further studies are necessary to confirm whether the influenza vaccine is associated with the development of PR and what the mechanism it is, if it is the case.

PR is a common skin disease to practicing dermatologists, but may be unfamiliar to non-dermatologists. More than fifty percent of unspecified skin rash is reported as adverse vaccine-related skin reaction in Taiwan, which implies that a specific diagnosis is rarely achieved. Taking the above into consideration, the PR following vaccination is possibly far underestimated. With the worldwide vaccination campaign against the pandemic flu, more and more physicians of different specialities may become involved in the vaccination program. We hope this case may serve as a reminder for both physicians and patients of such rare but benign skin reaction, which may be caused by the novel H1N1 vaccination.

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