



A Report of Severe Shoe Contact Dermatitis

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ABSTRACT

Delayed hypersensitivity reactions are inflammatory reactions initiated by mononuclear leukocytes 48-72 hours after antigens exposure. This case report is about a 21years old boy Allergic contact dermatitis in feet. Symptoms were inflammation and necrosis in the center of ulcers. Allergy to preservative chemicals in shoe leather was diagnosed as the reason. For reduction and deletion of this problem should be used shoes that have no this compounds.

Keywords: acute Allergic contact dermatitis, shoe leather, necrosis and infection

INTRODUCTION

Delayed hypersensitivity reactions or type IV hypersensitivity reactions are inflammatory reactions initiated by mononuclear leukocytes. This type is called delayed to be differentiated from an immediate hypersensitivity response, which generally appears within 12 minutes of an antigen challenge. T cells and monocytes/macrophages but not antibodies are main mediators of these reactions. In this type of hypersensitivity, following antigen exposure, tumor necrosis factor- α (TNF- α), interferon gamma (INF γ), interleukin 2 (IL2), Macrophage chemotactic factor (MCF) and some other cytokines are secreted by T-helper1 cells. These cytokines mediate the immune system by monocytes/macrophages and lymphocytes stimulation which lead to more activation and immigration of these cells [1, 2].

In the most of cases, allergen is a hapten and cannot elicit an immune response alone. Once entered the body, allergen is attached to body proteins. Formed hapten-carrier adduct represent the antigen to dermal dendrite cells and subsequent reactions initiates [3].

Based on the onset time (immediate or delayed), clinical symptoms (eczema, itching, burning, etc.) and anatomical features (stiffness and edema), these kind of hyper sensitivity are classified to [4].

At the molecular level, representation of the antigen by the hapten-carrier adduct to T-cells, leads to T- helper 1 cells activation and previously mentioned cytokines are secreted. In the presence of these cytokines, cell adhesion molecule expression increase and monocytes/macrophages and lymphocytes attach to the vessel walls which promote hyperemia, redness and erythema. Increased monocytes/macrophages and lymphocytes immigrate to dermis and epidermis and cause edema, stiffness and other hypersensitivity reactions symptoms [5&6].

Macrophages may be activated to form elongated cells, with finely granular, pale Eosinophilic (pink) cytoplasm and central, ovoid nucleus (oval or elongate), which is less dense than that of a lymphocyte. These cells which are called epithelioid cells have indistinct shape contour, often appear to merge into one another and can form aggregates known as giant cells [7].

Shoe dermatitis are occurred in person is sensitive to the rubber or compounds in shoes. The other identifiable causes of shoe dermatitis are cements, Dichromates used in tanning, dyes, anti-mildew agents, formaldehyde, and nickel eyelets or nickel arch supports [8].

REPORT AND METHOD

A 21 years old boy with Allergic contact dermatitis (ACD) symptoms was visited at Zanjan, Symptoms were inflammation, itching, redness, skin warmth. Shoe leather allergy was diagnosed as the reason. More severe symptoms were observed at the outstanding areas which were more exposed to the trigger. Not wearing those shoes reduced the symptoms. However re-wearing of those shoes had caused same symptoms which became severer after four days. Continuing wearing of those shoes resulted to infection and necrosis at the center of ulcers. Symptoms were confined to the area where the trigger actually touched the skin.

RESULTS

Observed symptoms in this case which were recovered by omission the triggers is due to allergic contact dermatitis. In this case the allergen was the preservative chemicals which were used in the shoe leather. These chemicals can elicit the immune system and cause delayed time hypersensitivity (DTH) in the exposed area. By removing the allergen, inflammation symptoms reduce and patients will recover.



Pic1. Inflammation (green fletcher), redness (blue fletcher) and infectious lesion (white fletcher) in tarsus



Pic2. Redness and erythema (black fletcher), infectious lesion (orange fletcher) and necrosis (red fletcher) in leg

DISCUSSION AND CONCLUSION

This case report includes a severe form of delayed time hyper sensitivity to chemical preservatives of shoe leather. These idiosyncratic reactions caused ulceration of exposed area following by the secondary infection and necrosis.

Infection can be bacteria and release infectious liquid [9].

Such reactions were also reported to corticosteroids and some drugs like lidocain [10, 11, 12]. These types of allergy to preservative chemicals in shoes were previously reported. Leather bracelet and leather watches as well as nickel handcuffs has also caused dermatitis in some cases [13, 14, 15]. Interestingly, even tick socks couldn't stop the allergy and omission the trigger was the only way for symptom attenuation.

Smith (2008) say Preventative measures to avoid shoe dermatitis are offered to the foot health care professional so that they may provide patient education.

Finally it can be concluded that talented people should identify allergen materials and avoid contact to them.

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