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Dermatomal Erythema Multiforme and HZV: A case report with literature review

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ABSTRACT

Erythema multiforme is one of the acute and recurrent skin lesions that are usually seen soon after HSV infection. The distribution of lesions is usually symmetrical favoring distal extremities. Rarely, EM can present with dermatomal distribution. The association between HSV and Erythema multiforme is well established in the literature. On the other hand, only a few cases were reported suggesting HZV infection to be a trigger of Erythema multiforme. Here we presented a case where a patient devolved dermatomal Erythema multiforme after he was diagnosed with HZV. Also, we provide below a review of articles of the same clinical association.

Keywords: Erythema Multiforme, Recurrent EM, *Herpes zoster* AND Erythema multiforme, Dermatomal Erythema multiforme.

1. INTRODUCTION

Erythema multiforme (EM) is an acute, immune-mediated, mucocutaneous hypersensitivity reaction. EM can involve cutaneous, mucosal lesions, or even both with varying degrees of blistering and ulceration. EM development is related to multiple etiologies including infections, use of certain medications, autoimmune disease, genetic factors, radiation, malignancies, and sarcoidosis (Paulino et al., 2018). Among these etiologies infectious causes represent about 90% of the cases. Most common in adults is herpes simplex virus (HSV) type 1 and HSV type 2 (Sokumbi et al., 2012). The second most common cause is drug-associated EM which represents about 10% of the cases (Sokumbi et al., 2012). Although classic EM is a self-limiting skin disease, other types like recurrent EM (REM) systematic treatment by antiviral will be initiated (Paulino et al., 2018).

Most of the studies confirmed that the most common cause of REM is HSV infection, and one study suggests that the majority of instances with idiopathic EM are thought to be caused by an asymptomatic HSV infection. Also, some report shows a rare association between EM and Varicella-zoster virus (VZV) or human herpes virus 3 (Wetter & Davis, 2010). Here we present a case of a middle-aged man with recurrent dermatomal EM after a query HZV infection. Also, we provide below a brief review of the literature.

2. METHOD

This literature review is based on an extensive literature search in electronic databases from 1 January 1998 to 9 January 2022 in PubMed, Google Scholar, Cochrane, Saudi digital library, Embase. By using the keywords “erythema multiforme” in addition to "recurrent” or "idiopathic", “*Herpes zoster* AND Erythema multiforme”, "Dermatomal Erythema multiforme" English language. Include published articles, clinical studies, review articles, systematic reviews, meta-analyses, case series, and case reports were considered for review.

3. CASE REPORT

A 41-year-old Saudi male, not known to have any medical illness, not on any medication, presented to our Dermatology clinic with a history of on and off erythematous rash on his hand, arm, and foot, for 3 years. The rash was described by the patient as a burning sensation. There was no involvement of mucosal membranes, no fever. He got 3 attacks for the last three years, triggered by stress and anxiety, relived by oral and topical steroids. No history of herpes simplex virus or Covid-19 virus infection was given. His rash was previously treated as herpes zoster, with unknown medications at a private hospital outside the country with good response and improvement. Upon dermatological examination for the current attack, multiple well-defined iris-like/annular erythematous patches with pale center were found on his hands, arms, and feet. Distributed unilaterally that involves specific dermatomes over right leg and foot (L5).

Figure 1 dorsal of left hand showing dermatomal distribution of EM C6, C8.

Figure 2 Palmar of hand showing dermatomal distribution of EM.

For the previous attacks, by reviewing patient pictures, multiple well-defined iris-like/annular erythematous patches with pale center were found on his hands, arms and feet, Distributed Bilaterally on both hands and arms, and unilaterally for feet that involves specific dermatomes over hands, arms and left feet. Over dorsal right hand (C7), dorsal left hand (C6, C8) (Figure 1), palmar left hand: (C6-C8) (Figure 2), arm (bilateral) (C5, T2) (Figure 3), dorsum of the left foot extending to the medial side (L4) (Figure 4). The patient was diagnosed with EM and responded very well to oral anti-viral (Acyclovir) and Antihistamine plus topical Steroids. Lesions resolved within 3 days without any residual skin changes.

Figure 2 C5 and T2 EM involvement of arm.

Figure 3 Dorsum of left foot L4 dermatome involvement of EM.

4. DISCUSSION

Erythema multiforme is divided into two types depending on how severe the symptoms are and the percentage of mucosal membranes involvement. Erythema multiforme minor is defined by mild cutaneous lesions with no or minimal involvement of mucosal membrane. On the other hand erythema multiforme major is characterized mainly by involving one or more mucosal

membranes with severe symptoms (Paulino et al., 2018). Other Subtypes include isolated, persistent, and recurrent EM (REM), all of these three subtypes mostly caused by Herps Simplex Virus infection (Sokumbi et al., 2012).

According to a retrospective review published in 2008 for a series of 48 patients at Mayo Clinic with REM, about 58% of patients has no identifiable cause for their recurrent episode of erythema multiforme, while the HSV was the cause in 23% of patients in that study. It is well known that type 1 is the commonest precipitating factor for the recurrent attack of EM even in clinically asymptomatic HSV patients (Wetter & Davis, 2010). Erythema multiforme has a minimum association with varicella-zoster virus infection.

In our patient, we established the diagnosis of Erythema multiforme secondary to HZV based on his medical history. As he was given the diagnosis of HZV when he sought medical advice in a private hospital outside the country, but no medical records or official reports could be reached to support the diagnosis. During our literature review, we found four case reports of erythema multiform caused by HZV, However, we could not reach to any study describing a dermatomal distribution. At first, we came across a study that presented many cases of Caucasian males and females with bullous EM related to typical thoracic HZV as it has a similar mechanism to trigger and caused recurrent idiopathic EM (Weisman et al., 1998).

Another case report was about 44 years old female who develops generalized erythematous papules two days after she was treated symptomatically for herpes zoster (Gupta et al., 2013). Also, A 59 years old male was diagnosed with erythema multiform according to his clinical finding and histopathology, after 4 days he developed Painful erythematous grouped vesicles on the right T9 and T10 dermatomes, the serologic test was done, showed positive for varicella-zoster virus (VZV) IgM and IgG, and that was the confirmation of the diagnosis of herpes zoster (HZ). The skin lesions improved after using acyclovir in addition to systemic steroid for erythema multiforme (Wolllina & Gemmeke, 2009).

5. CONCLUSION

Although it is well established that REM is linked to HSV infection, HZV does participate in very rare cases. Our patient was told that he has a HZV infection, later on, he devolved recurrent dermatomal EM. His response to antiviral therapy accompanied by HZV treatment protocol was significant as his EM was cleared after 3 days without any residual skin lesion. This patient was followed up with us and no recurrence of EM was noticed at all.

Author's Contributions

Fawaz Aljehani: Final Review of the paper.
Atheer Aljohani: Abstract and Conclusion Writing. Also, literature review of previous articles.
Ashwaq Alosaimi: Literature review of articles and Introduction writing.
Renad Alhazmi: Discussion and case presentation writing.
Lein Azzhary: Grammar checking, Vocabulary choosing, and providing figures.

Informed consent

Written and Oral informed consent was obtained from all individual participants included in the study. Additional informed consent was obtained from all individual participants for whom identifying information is included in this manuscript

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Conflict of interests

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

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