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ORF - An Uncommon Human Presentation of a Rare Virus

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Abstract

Orf is a cylindrical virus which belongs to the Parapoxivirus genus. This virus is endemic to most countries in the world and is hosted by small ruminant. Most human's Orf infections appear as ulcerating skin lesions following penetrating contact with the affected animal. The lesions typically appear as solitary papules on the hands, fingers and forearms.

In most cases reported in the literature, the affected patient had been directly in contact with the host animal. Our unique case, is the first report in the literature where the human infection was not caused by direct contact with the animal host. Moreover, it affected highly unusual sites. like the neck and the chest.

Keywords: Orf virus; Papules; Parapoxivirus; Ruminant

Introduction

Orf belongs to the Parapoxivirus genus. This virus is endemic to most countries in the world and is hosted by small ruminant. Most human Orf infections appear as ulcerating skin lesions following penetrating contact with the affected animal. In most cases reported in the literature, the affected patient had been directly in contact with the host animal. We shall present a unique case, in which there was no direct contact between the patient and the host animal. Moreover, it affected highly unusual sites, like the neck and the chest.

Case Report

A 20 year old healthy male was admitted to our Emergency Room with multiple penetrating stab wounds on his neck, chest and hands, caused by a butcher knife. He was admitted to the Intensive Care Unit for respiratory and hemodynamic stabilization. Ten days after his admission the patient developed a 7×5 cm raised cauliflower crusted lesion on nape of his neck (figure 1), and a dozen of pigmented 2×3 cm necrotic papules on his right wrist and forearm (figure 2). A biopsy was taken from the lesion on the neck, which revealed inflammatory tissue with necrosis of the epidermis, ulceration and intranuclear inclusion bodies. The stain for both Herpes and Tuberculosis were negative. These histological findings were interpreted as typical for the Orf virus affecting human skin. Due to the natural history of this virus a conservative approach to treatment was taken. With time there was gradual improvement in all lesions. Seen in follow up twelve weeks after his discharge, there was a complete resolution of all lesions (figures 1 and 2).



Figure 1: Orf lesions (nape of neck) - during infection (left, center) and after resolution (right)



Figure 2: Orf infected necrotic papules on wrist and forearm.

Discussion

Orf is a cylindrical virus which belongs to the Parapoxivirus genus. Parapoxivirus are a subgroup within the larger group of Poxviridae, which are characterized by their large size and double stranded DNA [1]. When examined with electron microscopy, a long crisscross design can be seen on negatively stained preparations [2]. This zoonotic virus is endemic to most countries in the world and is hosted by small ruminant such as sheep and goats. It is not uncommon in populations of sheep farmers, shearers, vets, farmers and their families [3]. There is a higher frequency of this virus in Europe and New Zealand than North America [4]. It poses a threat to welfare of sheep, posing possible economic losses to the farmer. In most cases reported in the literature, the affected patient had been directly in contact with the host animal. In our unique case, there was no direct contact between the patient and the host animal. There is no human to human transmission of this virus. No age and sex predilection has been reported but Orf has been found exclusively in the Caucasian population [5]. Most human Orf infections

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appear as ulcerating skin lesions following penetrating contact with the affected animal [6].

After the initial inoculation of the virus, there is an incubation period ranging from five to seven days. The lesions typically appear as solitary red-blue hemorrhagic flat topped papules generally ranging between 2-5 centimeters [7]. However, patients with compromised immunity or a history of atopic dermatitis can develop larger or unusual fungating lesions [8]. The lesions typically appear on the hands, fingers and forearms but can appear on the face and can be associated with regional adenitis and lymphangitis. Lesions during the early stages can be irritating and painful and accompanied by a mild fever. The infection generally goes through six clinical stages each lasting about a week. The initial stage consists of a single red maculopapular lesion [9]. The lesion develops to become a weeping nodule which then crusts over and gradually regresses [9]. This virus is self limiting with complete resolution within three to six weeks [10].

Our patients' presentation of the Orf virus was unusual both in quantity, size and location of the lesions. Whereas the literature describes the Orf lesions as relatively few and minor mainly located on the hands and forearms, our patient had abnormally large fungating lesions and in unusual locations, corresponding to the sites where he was stabbed by the knife. Unlike other reported Orf cases, our patient was neither a farmer nor was he exposed to host animals. Our impression is that the stab wounds were caused by a knife contaminated with the Orf virus.

Conclusion

To the best of our knowledge, this is the first report in the literature where Orf human infection was caused not by direct contact with the animal host, but rather by a contaminated vehicle (the butcher knife). Moreover, as of this unique mode of transmission, it affected highly unusual sites, like the neck and the chest. Our case report emphasize the need to raise the possibility of Orf as a cause of infection even in such unusual cases, not just to have the accurate diagnosis but more important because Orf has a self limiting course, and therefore there is no need for aggressive treatment and conservative approach is suitable.

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