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CASE REPORT

A viral infection of the hands: Orf

Mehmet Uluğ[1], Murat Selim Ürer[2], Memet Erşan Bilgili[3]

[1] *Department of Infectious Diseases and Clinic Microbiology, Özel Ümit Hospital, Eskişehir, Turkey*
[2] *Department of Dermatology, Özel Ümit Hospital, Eskişehir, Turkey*
[3] *Department of Dermatology, Osmangazi University School of Medicine, Eskişehir, Turkey*

ABSTRACT

Orf is a viral infection transmitted to humans from sheep and goats. In this report, three cases with orf were presented. Two of our patients had lesions on only one hand, whereas one patient had additional lesions on the other hand. The lesions were most commonly located on the dorsal aspect of the fingers and typically started as a painless itchy macule that became papular and, subsequently, purulent with a necrotic center. The lesions were managed conservatively, and no specific therapy was undertaken. The lesions regressed spontaneously and slowly without scarring during the next five weeks. In conclusion, we are of the opinion that human infection with orf will continue to occur, and can occur anywhere; thus, all physicians should be aware of the possibility of orf infection and consider orf in the differential diagnosis of cases with relevant animal exposure. *J Microbiol Infect Dis 2013; 3(1): 41-44*

Key words: Orf, skin infection, zoonoses

Ellerin viral enfeksiyonu: Orf

ÖZET

Orf, koyun ve keçilerden insanlara bulaşan viral bir hastalıktır. Bu çalışmada ellerinde orf lezyonları gelişen üç olgu sunuldu. İki olguda lezyonlar yalnızca bir elde varken, üçüncü olguda her iki elde lezyonlar vardı. Lezyonlar genellikle parmakların dorsal yüzünde görülürken, tipik olarak ağrısız, kaşıntılı makül şeklinde ortaya çıkıp sonrasında papül ve pürülan nekrotik merkezli bir hale geldi. Lezyonlara yönelik spesifik bir tedavi uygulanmadı ve konservatif olarak yaklaşıldı. Lezyonlar, skar dokusu bırakmadan beş hafta içerisinde kendiliğinde yavaş yavaş geriledi. Sonuç olarak, orf enfeksiyonunun insanlarda görülmeye devam edeceğini ve tüm hekimlerin lezyonların her yerde görülebileceğini unutmadan hayvan teması olan olgularda orf hastalığını ayırıcı tanıda göz önünde bulundurmaları gerektiğini düşünmekteyiz.

Anahtar kelimeler: Orf, deri enfeksiyonu, zoonoz

INTRODUCTION

Parapoxviruses, which are found worldwide, are common pathogens of sheep, goats, and cattle. Human infection, characterized by localized epithelial lesions, is an occupational hazard for these who handle infected animals. Parapoxvirus infection in sheep and goats is usually referred to as sore mouth, scabby mouth, contagious pustular dermatitis/ecthyma, or orf; the corresponding human infection is referred to as orf.[1] Orf virus infection is not usually seen in routine clinical practice, but it is an occupational infection common in persons engaged in sheep and/or goat husbandry.[2] Skin trauma, either overt or incidental, may cause virus transmission from animals to humans.[3] No human-to-human transmission has been reported, but cases of reinfection have been documented.[4]

In this report, we present three cases with orf who were diagnosed in our hospital. The aim of this study was to describe the clinical course, laboratory data, and prognosis of this entity in light of the literature.

CASES

All of the cases were admitted to Private Ümit Hospital, located in the city center of Eskişehir, Turkey, in the last two years. All of the patients were male with a median age of 36 years. Only one patient was a farmer living in a rural community. The oth-

Correspondence: Mehmet Uluğ,
Özel Ümit Hastanesi, Enfeksiyon Hastalıkları ve Klinik Mikrobiyoloji Kliniği, Eskişehir, Turkey Email: mehme-tulug21@yahoo.com
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er two patients were living in urban areas. Two of the cases had a history of cutting their hands during animal slaughter at the Feast of Sacrifice, and the other had had contact with a sick animal. The animals were either slaughtered or prepared for consumption by the cases. The lesions appeared approximately two weeks later on the sides of the cut. The median incubation period was 10 days. Patient lesion locations, incubation periods, admission times, and healing durations are summarized in Table 1. During initial visits to primary care services, all of the patients were diagnosed with local pyoderma and were given antibiotic therapy. None of the patients were taking medications or had allergies.

Table 1. Characteristics of the patients and their lesions

Sex, Age (y)	Job	Location	Incubation (day)	Admission time (day)	Recovery time (day)
1 M, 42	Butcher	Right hand, 1st finger	8	10	30
2 M, 32	Farmer	Left hand, 1st finger	10	12	40
3 M, 36	Butcher	Right hand, 2nd and 3rd finger, left hand, 2nd finger	15	17	45

The lesions were located on the thumbs of two patients (Figure 1and 2) and were bilateral on the index finger of the other patient (Figure 3 and 4). Orf lesions occurred on the right hand of one patient, on the left hand of the second patient, and on both hands of the third case. The extremities involved were on the dominant side in two cases. The lesions were most commonly located on the dorsal aspect of the fingers. They were 1 to 3 cm in diameter and typically started as painless itchy macules that became papular and, subsequently, purulent with a necrotic center. The index finger of the left hand of the third case showed moderate diffuse swelling with surrounding hemorrhagic blisters during the third week (Figure 4). The finger was moderately tender, and range of motion was limited due to swelling and pain. Prodromal symptoms, such as malaise, night sweats and fever, were unremarkable, and the patients had little pain. No axillary lymphadenopathies were observed, and the remainder of the patients' physical examinations was unremarkable except for the lesions.

Figure 1. The appearance of the first patient's lesion on referral day.

Figure 2. The appearance of the second patient's lesion on referral day.

Figure 3. The appearance of the third patient's lesion on referral day.

Figure 4. The appearance of the third patient's lesion on day 21 of the infection.

Complete blood counts and C-reactive protein levels of the patients were normal. Gram staining and cultures were performed for all lesions. Samples obtained from the lesions did not show polymorphonuclear leukocytes, and bacteria on the Gram stain and the cultures were negative. Orf was histopathological confirmed for the third case only, at the Department of Pathology at the Osmangazi University School of Medicine in Eskişehir, revealing epidermal ulceration and dense dermal inflammation with intranuclear, intracytoplasmic inclusions in the vacuolated epidermal cells. Infiltrate with plasma cells, macrophages, histiocytes, and lymphocytes were observed. Microvesicles were also present. The cases were accepted as orf based on patient history, appearance of the lesions, and, in the third case, histopathological findings.

The lesions were managed conservatively, and no specific therapy was undertaken. The lesions regressed spontaneously and slowly without scarring during the next five weeks. Resolution of the lesions occurred within 38.3 days on average (Table 1). Symptomatic management consisted of adequate analgesia, wound care with povidone-iodine, and keeping the lesion dry. No antimicrobial treatment was administered to the patients. The patients have been followed since diagnosis. After six months of follow-up, all three are well, with no disease recurrence.

DISCUSSION

Orf is an infectious mucocutaneous disease of sheep and goats caused by an epitheliotropic DNA parapoxvirus that is transmissible to humans.[5,6] The prevalence of human orf infection is underestimated, perhaps because orf is a common, self-limiting disease that is recognized by the population at risk; therefore, medical care is not sought, and many infections are not reported.[6] In a cohort of farm workers in England, orf prevalence was 4%.[7] However, in our country, orf prevalence is unknown.

Humans who handle infected animals, carcasses or contaminated equipment can contract human orf by direct inoculation through cuts or abrasions in their skin.[2] Veterinarians, wool shearers, abattoir workers, as well as, non-professionals, such as farmers' children and housewives, Muslims at the Feast of Sacrifice, visitors to zoological gardens, and persons who slaughter their animals for traditional activities, are at particular risk.[2] In two of our cases, transmission occurred from a ram and a sheep to the patients, respectively, during the first week of the Feast of Sacrifice, during which animals are generally sacrificed.

Orf infection tends to occur in the spring and the summer months[2]; all our patients contracted orf during these two seasons. The incubation period may extend from a few days to a week with minimal complaints of pain. Spontaneous resolution occurs within four to six weeks after onset in all cases.[3,5] No sex predilection has been previously reported, but all cases in our report were male. Men may be more susceptible because they more often come into direct contact with animals and the flayed skin of sick animals compared to women.[2,7]

Although the most common sites of orf are the hands and face, other regions of the body may be affected in rare cases.[2] It has been reported that the lesions are most commonly seen on the non-dominant hand3, as in two of our cases. In humans, the disease manifests itself as a solitary papular skin lesion on an exposed area of the body. Characteristic painless lesions developed on the fingers of all our patients, and one patient had more than one lesion.

Although the disease is classified as a near neoplasm, lesions are generally benign, and the disease is usually self-limited.[5] Only rarely do systemic symptoms (low grade fever, lymphadenitis) or complications occur.[6] The principle complication is bacterial superinfection, with or without extension.[8] Furthermore, orf may be complicated by Stevens Johnson syndrome, erysipelas, generalized mucocutaneous eruption, eyelid edema, or giant, persistent or recurrent lesions in immunocompromised patients.[8] Immunosuppressed persons may also develop large, fungating lesions.[7] In this study, fever and other symptoms were not noted in any of the patients, and physical examination revealed no axillary lymphadenopathies.

Prompt diagnosis is easily achieved by obtaining a complete patient history and considering human orf as a differential diagnosis for patients with unusual lesions and past contact with sheep or goats.[3] Diagnosis is confirmed by pathological examination of an incisional biopsy specimen.[3,9] The definitive diagnosis of orf is obtained by electron microscopic visualization of the characteristic virus in the cytoplasm of keratinocytes or by isolating the virus by culturing a biopsy specimen on lamb fibroblasts.[9] Polymerase chain reaction is a more reliable method for identifying the viral genome in specimens regardless of disease stage. Isolation of the virus by tissue culture inoculation has proved to be difficult, and serum analysis for antibodies is seldom used.[3] In this report, diagnosis was performed based on patient history and clinical findings, as well as, histopathology in one case.

Differential diagnosis of this dramatic but generally benign infection, which usually should not require redundant, invasive or expensive therapies, is very important.[2] Cutaneous anthrax, pyoderma gangrenosum, herpetic whitlow, felon, milker's nodule, malignant melanoma, staphylococcal skin infections, deep mycotic skin infections (coccidioidomycosis or sporotrichosis), atypical mycobacterial infections, and nocardiosis should also be during differential diagnosis.[5] Exclusion of the enumerated lesions based on case history, clinical examination, and laboratory findings, as in the present cases, is not difficult.[3]

Orf is a self-limiting disease in immunocompetent patients, and no specific treatment is required.[6] Antibiotics are widely used in case of bacterial infection, but they do not affect the course of the disease.[6] Oral antibiotics should be reserved only for documented secondary bacterial infections.[5] There is no specific antiviral therapy available yet.[10] Anecdotal reports have described apparent beneficial effects from using 3% cidofovir topical cream; however, no controlled trials of cidofovir topical cream have been performed. Recently, improvement was observed when a giant orf lesion was treated with topical imiquimod, a toll-like receptor/interferon modulating compound, after topical and intralesional cidofovir had been unsuccessful.[1] Cryotherapy (liquid nitrogen), surgical excision, interferons, and 40% topical idoxuridine have used in the treatment of orf.[6] In immunocompromised patients with rare progressive and destructive lesions, surgical debridement and antiviral therapy may be required.[7] Our patients were not diagnosed with anthrax or bacterial superinfection, and thus, no antibacterial drugs were administered.

No human deaths due to orf have been reported.[7] Therefore, prevention is the first line of defence.[2] However, the prevention of orf is difficult, and especially since visible lesions may not be present on the animal. Special care in handling animals with visible lesions can help to decrease the risk of infection.[10] Control measures include ensuring the general cleanliness of animal housing areas, vaccinating farm animals, such as sheep and lambs, in areas where orf is endemic, discouraging visitors from direct contact with animals, and encouraging hand washing.[1,2,7] A live attenuated animal vaccine has been used and is available in Ireland.[7] Research into effective and economical vaccines is ongoing.[9]

In conclusion, although orf infection is seldom reported in Turkey, many cases likely remain unreported or are misdiagnosed. For infection control and prevention, transmission routes should be known; good hand hygiene and the use of other personal protective measures are necessary. In conclusion, we are of the opinion that human infection of orf will continue to occur, and can occur anywhere; thus, all physicians should consider orf in the differential diagnosis of cases with relevant animal exposure.

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