Case series

Orf Virus Infection in Human (EchtymaContagiosum): A Report of Eight Cases in the North of Iran

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Abstract

Orf or Ecthyma contagiosum is a zoonotic disease that is the result of a dermatophitic parapox virus infecting goats and sheep. The virus is transmitted to humans through contact with infected animals or fomites. Here in this paper, we reported eight patients infected with orf viruses and also tried to provide a relatively complete data of this disorder by reviewing of the literatures. Worthknowing about the disease may occur at any location, so all clinicians and researchers need to have this disease in mind as a differential diagnosis in patients who has a history of working with animals.

Keywords: Ecthyma contagiosum; Orf virus; Skin infection

Introduction

Ecthyma contagiosum, contagious pustular dermatitis, thistle disease or orf is a zoonotic dermal disease that is caused by orf virus. Orf is a DNA virus of the family of Pox viridae, genus of Parapox virus with a global distribution in terms of epidemiology (1). Parapoxviruses are a common pathogen in goats and sheep resulting in a series of acute pustular lesions, and can spread to human. For those who are concerned with these viruses infected animals are considered as an occupational hazard. Orf virus in routine clinical investigations is not seen, and is an uncommon finding, but is an infection that can be a stratum of society whose job it is to deal with these animals, including veterinary surgery, butchers and ranchers (2). Human infection is often localized and isolated epithelial lesions on the hands and arms. But in some cases in other parts of the body, such as the face and perianal areas have been reported (3). These lesions are similar to the benign neoplastic lesions which are usually self-limited. Human to human transmission of the disease has not been reported so far. But the evidences of reinfection have seen. Diagnosis of orf is characterized by a history of contact with infected animals, the appearance of lesions and viral culture (4). Treatment is usually supportive and includes a wet dressing, topical antiseptic, immobility of fingers and antibiotic therapy for secondary bacterial infections. Most lesions recover within two to three weeks. Larger lesions can be treated through surgery or cryotherapy. No underlying risk factors are known for this disease so far. The disease has a very good prognosis (5).

In this study, eight cases of infection with human orf virus besides a review of literature is presented. And the aim was to evaluate such cases during past ten years in the northern Iran.

Case presentations

In this case series study, our cases were admitted with a diagnosis of orf disease and bacterial superinfection at the teaching Razi hospital (Infectious disorder center of Northern Iran) between January 2003 and March 2013. The most common main chief complaints were upper extremity lesions with erythema. Complete histories were taken and physical examinations performed. The lesions were seen in different stages of the disease (Figure1). All of them underwent supportive care and also antibiotic therapy if needed. A summary of case presentations is mentioned below.

Case 1

In July 13, 2008, a 63-year old man, known case of diabetes presented with lesions on the second finger of right hand. He had slaughtered a sheep, four days ago. Lesions were initially erythematus and then

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changed into the exudative nodule from last day. On physical examination an erythematous band observed on his forearm. He had no constitutional symptoms. The patient admitted with an impression of orf infection and went through antibiotic therapy with 1 gram intravenous Cefazolin and 80 mg Gentamycine.

Figure1. different stages of the diseas

Case 2

On October 10, 2009 a woman aged 35 admitted with an impression of orf disease in our center. He had a history of direct contact with sheep 2 weeks ago. Initially erythematous lesions of the middle and distal phalanx of fingers on the right hand appeared. The lesions gradually enlarged and eventually changed into papules and then blisters. Lesions were itchy. The patient's right forearm and elbow were red and swollen. Bilateral axillary lymphadenopathy was evident in the physical examinations which were stiff and painful. The patient was placed under maintenance therapy discharged with a good general condition.

Case 3

A 53 year-old woman, who had contact with lamb, was admitted in September 10, 2007 with a hemorrhagic lesion on the first finger of the right hand. A week before, the patient's lesion was as a spot posterior to the right hand thumb. Four days ago has become into a hemorrhagic 20 *20 mm bullae with erythematous border. No other remarkable finding observed in the examinations. Laboratory results were also normal. The patient was given Cefazolin 1 g three times per day for treatment.

Case 4

In November 8, 2012, a 39 year old man was admitted with a one week history of 10-20 mm blister raised on the left elbow with a necrotic center and erythematus border. He had fever and chills at the time of admission. The patient had history of slaughtering of a sheep, ten days ago. A tender lymph node in the left axillary area as well as an epitrochlear lymph node were palpable in examinations. Biochemical laboratory evaluations showed no significant changes. Cefazolin 1.5 gr, three times per day was administered for his treatment. His lesion healed within two weeks.

Case 5

A 48 year-old woman admitted due to laceration and abscess formation followed by cutting of fifth finger of the left hand. The cutaneous lesion of patients had purulent discharge. She had the history of invasive trauma in this area about one month ago. Blood cell count (CBC) and blood culture were normal. Contact with sheep was documented. Finally the diagnosis of Orf disease made based upon all history taken and physical examinations. Cefazolin administered and the patient discharged after primary healing of the lesion with oral cephalexin 500 mg recommend.

Case 6

On June 6, 2012, a 26-year-old male who presented with pain, swelling and erythema of the index finger of the right hand following a bite by a sheep from ten days ago. The lesion turned into nodular shape six days later, to the extent that he was not able to flex his index finger joint. Systemic symptoms were unremarkable. Urine analysis, CBC and other laboratory tests were normal. The patient admitted with a diagnosis of orf disease and treated with ceftriaxon 1 gram and tablet of ciprofloxacin 500 mg.

Case 7

A 38 year-old woman admitted in July 5, 2008 with the chief complaint of pain and swelling of the right upper limb from. About 15 days ago, when the person was cleaning the sheep products, the right wrist was injured. Four days ago a papular lesion with black center produced on the site of the wound and became larger. Two days ago, erythema, swelling, and warmth added into the lesion and were spread to the proximal upper extremity. Days prior to admission the patient was febrile. By ruling out of several differential diagnosis based on clinical examination, etc., the diagnosis of orf disease was confirmed. Cephazolin and ciprofloxacin administered by the infectious disorder specialist and the patient's lesions are improved weeks later.

Case 8

A 22-year-old boy was bitten on his index finger by a pet lamb. One week later he was admitted with a diagnosis of probable cellulitis. On physical examination, serum and pus discharge was observed from the bite site and the lesion. No lymphadenopathy were detected. Investigations including CBC and blood culture were also normal.

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The patient was treated with Cefazolin and Gentamycin 80 mg with the diagnosis of of disease. The lesion healed spontaneously within two weeks.

Discussion

Orf is primarily a disease of sheep and goats and a human form is as a result of direct contact with infected animals. The disease occurs worldwide, but the majority of cases have been reported from Europe and New Zealand (2). Some cases of human contaminating form are also reported in Iran. Orf virus exists in skin lesions and crusts, appears to enter through abrasions and cuts into the skin. The virus can also be seen in sheep which are clinically healthy. Transmission is by direct contact or through fomites; objects that cause of the collecting and transferring of microbial pathogens (such as clothing, bedding, fabrics, etc.). Orf virus survives almost a month in the wool and skin after lesion improvement. The virus is highly resistant to inactivate in the environment and is isolated from ulcers dried after 12 years (5, 6). Orf skin lesions are often solitary and can be seen in areas of the body like fingers, hands, forearms, arms, and in some cases also on the penis, and perianal and periorbital areas (7). The initial phase of the disease presents as a small papule a week after exposure to microorganisms. In the second phase, lesions become larger and changes into the lens-shaped nodules with central red, white circle around and the erythematous outer edge. In the third phase, lesions again become larger and appear exudative shape. The fourth phase is regenerative phase,and the lesion remains as a black spot and narrow crusts. Papillomatosis is the fifth phase of the disease that the lesion is characterized by a very small papylomason them. The final phase is the healing stage of the lesion. Cutaneous lesions reported in this study are in different stages. Some clinical manifestations such as lymphadenopathy, lymphangitis and fever may also be present with this viral infection (8-11). If there is a history of animal contact and initial clinical suspicion of the presence of this, the diagnosis would be easy. Electron microscope can be used to confirm the diagnosis; however, these methods are not able to differentiate orf from other Parapox viruses (12). Fluids of vesicles are not suitable for diagnosis, due to the low amount of virus in them. Serologic tests are often not available, but an antibody response occurs that is evaluable and separate able. PCR of vesicles fluids and crusts and or biopsy can detect parapoxviruses, and virus-specific primers are able to confirm the orf virus (1). Based on the lesion characteristics and history taking, various differential diagnoses such as: cutaneous anthrax,milker's node, pyogenic granuloma, amelanin melanoma, Squamus cell carcinoma (SCC) and Basal cell carcinoma (BCC) were proposed (13). Extensive pitting edema, painless lesions and pruritic papules are existing in cutaneous anthrax, which this characteristic differentiates this from our diagnosis. Pyogenic granuloma has also no pain, has no infectious origin and is associated with bleeding. A milker's nodule is very similar to the orf, except that the number of lesions is more in milker's nodule but single in orf. Finally, with regard to all the clinical conditions and para-clinical evaluations, the diagnosis of orf disease was confirmed in our cases (14). It does not require any specific treatment for the disease, and the treatment is often limited to supportive therapy, including wet dressing, topical antiseptic, and immobility of the fingers. But in case of secondary bacterial infection and loss of spontaneous improvement, the disease should be treated. Large exophitic lesions could be separated from the underlying dermis, although the lesions may recur in patients with immunodeficiency. Cryotherapy has been used in some cases. An injection of interferon-alpha is also somewhat useful, but immune adjustment using Imiquimod could well accelerate the recovery of the lesions. Cidofovir cream can also be effective in treating very large orf lesions (15). Our cases admitted and went through supportive treatment, intravenous antibiotic also used in patients with secondary bacterial infection. Some complications can also be followed by orf disease such as: Erythema multiforme, toxic erythema, bullous pemphigoid, enlarging of the lesion and also ocular and perianal involvement are noted too (16).

Since, orf is a self-limiting disease, so early diagnosis is important to prevent complications and improper treatment. Taking of precise and consistent history of the patient is the correct way to reach a diagnosis. For infection prevention and control should also identify the roots and routes of transmission and try to update and elevate the level of people's vision about this disease through outreach and education at the community. Worthknowing about the disease may occur at any location, so all clinicians and researchers need to have this disease in mind as a differential diagnosis in patients who has a history of working with animals.

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