ISSN: 2383-2568 *Quarterly of International Archives of Health Sciences 2015;2(3):129-132*

Human Orf Disease; a case series in Kashan City, Iran

ARTICLE INFO

Article Type
Case Series

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How to cite this article
Afzali H, Momen–Heravi M. Human Orf Disease; a case series in Kashan City, Iran. International Archives of Health Sciences. 2015;2(3):129-132.

ABSTRACT

Aims Infection with parapoxvirus is an occupational hazard of farm workers, abattoir workers, veterinarians, and others with frequent exposure to sheep, cattle, or goats. The aim of this study was to determine the risk working groups in Kashan City, Iran.

Patients & Methods This case series study was performed in the private clinic of Dr. Afzali in Kashan region, Iran during 2000-13. Diagnosis was made by history, appearance and location of the lesion and clinical course through pathologicalexamination of all patients by an expert physician. The history of contact with sheepor goats, duration of the prodromal period, the location of the lesions, the patient's dominant extremity, duration of recovery, complications, clinical symptoms, profession, age and sex were recorded. Data were entered into SPSS 16 software and were presented by descriptive statistics.

Findings 11 patients with Orf disease were recognized during the study period, 8 of which were male. The mean age of all samples was 33.1±15.3 (12 to 64) years. The mean of incubation period was 11.7±6.4 (5 to 19) days. The mean of lesions resolution was 24.8±8.5 (14 to 42) days. All cases resulted in healing without any complications.

Conclusion The most important risk groups in our study were abattoir workers, butchers, housewives and students who handle infected animals.

Keywords Humans; Orf Virus; Parapoxvirus

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Article History
Received: July 1, 2015
Accepted: August 30, 2015
ePublished: September 22, 2015

CITATION LINKS

[1] Characterization of sealpox virus, a separate member of the parapoxviruses [2] Parapoxviruses of seals and sea lions make up a distinct subclade within the genus Parapoxvirus [3] A viral infection of the hand commonly seen after the feast of sacrifice: Human orf (orf of the hand) [4] Orf.JAMA [5] Orf.Cutis [6] Human ORF disease localized in the hand: A false felon [7] Human orf [8] Occupational dermatoses [9] Report of a rare clinical form of Orf [10] A seven-year-old girl with orf of the hand [11] Human orf virus infection from household exposures-United States, 2009-2011 [12] Three patients with orf (ecthymacontagiosum) [13] Unusual presentation of human giant orf (ecthymacontagiosum) [14] Human orf [15] Orf virus infection of workers in the meat industry [16] Human orf [17] Orf virus infection ofworkers in the meat industry [18] Incidence of orf disease in drmatology center clinic in Kerman [19] Orf: Contagious pustular dermatitis [20] Report of a case of Orf with multiple lesions [21] A case report of ectymaconaginosum with multiple lesions in hand and leg [22] ORF: A report of eleven cases in five urban Iranian families

Introduction

Parapoxvirus is a genus of oval, relatively large and double-stranded DNA viruses which are common pathogens of sheep, goat, and cattle. Human infection with parapoxvirus is an occupational hazard for those who handle infected animals, e.g. farm workers, abattoir workers, veterinarians and students. Parapoxvirus infection in sheep and goats is usually referred to as sore mouth, scabby mouth, contagious pustular dermatitis/ecthyma or orf, and the corresponding human infection as Orf. The relevant parapoxvirus species is referred as "orf virus" (contagious pustular dermatitis virus or contagious ecthyma virus) [1, 2].

During the feasts of sacrifice, the population may be in contact with sheep and goats for a variety of reasons [3]. Orf has 6 distinct clinical stages: maculopapular (consists of an erythematous macule or papule), target (the lesion has a red centre, a central white ring, and an outer red halo), acute (consists of an erythematous weeping nodule), regeneration (the lesion is dry with small black dots on the outside surface), papillomatous (papillomas appearing on the surface), and regression (dry crust) [4, 5].

Herpetic paronychial abscess, milker's nodules, cowpox, cutaneous anthrax, infection of *Mycobacterium marinum*, deep fungal infections, pyogenic granulomas, keratoacanthoma and malignant tumors are differential diagnoses of the disease [4, 6-8].

As there is no study about the prevalence of the disease and its risk groups in Iran, the aim of this study was to determine the risk working groups to help more early clinical recognition of this self-limiting viral condition and avoid unnecessary surgical intervention.

Patients & Methods

In this case series study, the private clinic of Dr. Afzali in Kashan region, Iran, was the place of study according to high referring of the patients and the occurrence of Orf disease was evaluated during 2000-13.

Diagnosis was made by history, appearance and location of the lesion and clinical course through pathological examination of all patients by an expert physician. Fluid and scrapings were taken for bacterial staining techniques and bacterial culture. Examination for bacterial causes was performed on gram-stained material collected on a swab and fluids were cultured in agar blood media (Merck; Germany). Patients were asked to attend to a dermatologist for biopsy. The specimen was sent to laboratory and after H&E staining, pathological examination was performed by an expert pathologist.

The history of contact with sheep or goats, duration of the prodromal period, the location of the lesions, the patient's dominant extremity, duration of recovery, complications, clinical symptoms, profession, age and sex were recorded.

Data were entered into SPSS 16 software and were presented by descriptive statistics.

Findings

11 patients with Orf disease were recognized during the study period, 8 of which were male. The mean age of all samples was 33.1±15.3 (12 to 64) years.

Figure 1) Characteristics of human Orf cases

No.	Sex	Age	Job	Location	Residency	History of animal contact	Underlying disease	Recovery time (day)	Complication
1	M	31	construct worker	Right hand's finger	Urban	Yes	No	28	No
2	F	42	housewife	Right hand's finger	Urban	Yes	No	21	No
3	M	19	butcher	Left hand's finger	Urban	Yes	No	35	No
4	M	32	butcher	Right hand's finger	Urban	Yes	No	14	No
5	F	45	housewife	Right hand's finger	Urban	Yes	No	28	No
6	M	36	construct worker	Left hand's finger	Rural	Yes	No	21	No
7	M	12	student	Right hand's finger	Rural	Yes	Yes	42	No
8	M	64	abattoir workers	Lip (face)	Urban	Yes	No	21	No
9	M	26	student	Left hand's finger	Urban	Yes	No	14	No
10	F	43	housewife	Right hand's finger	Urban	Yes	No	28	No
11	M	14	student	Hand (dorsum)	Urban	Yes	No	21	No

They were all contaminated by direct contact with goats or sheep mouth. The animals were touched, slaughtered or prepared for consumption by the cases. 9 of cases were from the Kashan City and 2 from rural area. The mean of incubation period was 11.7±6.4 (5 to 19) days. The mean of lesions resolution was 24.8±8.5 (14 to 42) days. There was no underlying disease in cases except one person who had diabetes. Cases had little pain and no fever. They had no axillary or elbow lymphadenopathy. Antibiotics had been prescribed in 4 cases due to misdiagnosis as bacterial infections by general physician. Complete blood counts were normal in all cases. The bacterial culture and staining were negative in all cases. The symptomatic management consisted adequate analgesia, wound care and keeping the lesion dry were applied in all cases. All cases resulted in healing without any complications (Figure 1).

Discussion

The Orf disease is common among shepherds all around the world [9]. Although human Orf cases are reported most commonly because of occupational exposure to infected sheep and goats, household meat preparation and animal slaughter also pose risks for Orf infection [10]. Some of our cases had an exposure with infected animal and some of them had history of household meat preparation. Human Orf was seen in the hands of individuals who were not professional workers, e.g. students, which was believed to be as a result of uncontrolled touching with infected animals during the feasts of sacrifice. Morbidity and Mortality Weekly Report (MMWR) describes 4 cases of human Orf associated with household meat processing or animal slaughter, highlighting the importance of nontraditional risk factors [11]. Schimmer *et al*. have reported 3 Orf disease patients; a 16-year-old Moroccan girl who had cut her finger in a butcher's shop, a 47-year-old Dutch woman who had allowed a lamb to suck on her finger on a children's farm, and a 50-year-old Dutch farm woman [12].

The most common involved site was hands, which is in accordance with other studies; only one case had lesion on the face who was a sheep farmer that was proliferated dramatically with the formation of satellite lesions after curettage [13]. Diagnosis was confirmed by incisional biopsy specimen; a pathological examination. Electron-microscopy and isolation of the virus by tissue culture inoculation can help in establishing the diagnosis but are difficult processes [8]. The vacuolization of cells and acanthosis with finger-like downward projections of the epidermis and dilated capillaries and mononuclear infiltrate in the dermis was reported in 6 of our cases.

Human Orf is benign and does not require any specific treatment. Lesions generally heal without complication [4]. Lymphangitis, lymphadenitis and general malaise with fever can accompany the peripheral lesions. Super-infection, erythema multiform, chills, fever, and rare ophthalmic involvement are the rare reported complications [7, 14, 15]. Our cases had no fever and axillary or elbow lymphadenopathy.

There were only 2 large scale studies on Orf in other countries (in Norway in 1975 [16] and in New Zealand in 1983 [17]) and just one in Iran. In study of Shamsaldini & Rezaei have analyzed 15012 patients older than 20 years old in a dermatology center in Kerman City, Iran, during 1991-96 and have reported the incidence of Orf as 0.4% [18].

Nadeem *et al*. have presented series of five cases of Orf in children of farmers in the west of Ireland, seen over a 10 year period [19]. Khodaeiani & Naghili have reported a clinical form of Orf with nodulotumoral and near-neoplasm appearance, which is one of the rare cutaneous forms of this disease [9]. Rahnama & Yavari have reported a 47-year-old man with 14 lesions on different parts of his right hand [20]. Shirzadi & Pedram have reported a 30-year-old man with history of skin trauma about a month earlier then the time of study whose second finger of his left hand was injured by infected knife during cutting meet and coinfection occurred when he itched his leg. Skin lesion appeared in the area of skin trauma and the site of itched leg in less than one week because of the disease duration [21]. Shirzadi & Pedram have also selected 11 patients with Orf from 5 Iranian families. Most of the cases had a previous wound or developed a cutaneous injury while chopping meat. Contacting with such wounds among the family was the reason for spreading the disease [22]. There was no familial spreading in our cases.

There were some patients with lesions similar to Orf which their differentiation were difficult and was only possible by clinical examination and biopsy but the patients were not agree, so they were omitted from study population.

Orf should be included in the differential diagnosis of patients with clinically compatible skin lesions of hand and a history of household meat processing or animal slaughter. Persons and communities with these exposure risks should also receive counseling regarding the use of non-permeable gloves and hand hygiene to prevent infection. Also infected individuals should take care not to further infect themselves with autoinoculation or to spread infection to contacts, including animals. It is important to consider human orf as a differential diagnosis of hand lesions to prevent overtreatment and complications. Important information about transmission route of Orf should be given to the relevant people and special attention should be paid to the rules of slaughtering an animal.

Conclusion

The most important risk groups in our study were abattoir workers, butchers, housewives and students who handle infected animals.

Acknowledgements: We would like to thank our participants for their patience and ongoing participation.

Ethical Permission: Consent form obtained from all patients before study and study was approved by the Ethics Committee of the Research Deputy of Kashan University of Medical Sciences.

Conflict of Interests: The authors have no conflict of interest.

Funding/Support: The present study was supported by the Research Deputy of Kashan University of Medical Sciences.

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