



# Atypical zoonotic pox: Acute merging illness that can be easily forgotten

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## ARTICLE INFO

### Article history:

Received 20 January 2018

Revision 10 February 2018

Accepted 14 February 2018

Available online 1 March 2018

### Keywords:

Monkeypox

Cowpox

Raccoon pox

Buffalopox

## ABSTRACT

Pox is an important infection that can cause the acute illness with dermatological manifestation. Apart from the well-known pox infections, the emerging zoonotic pox infections become interesting new issue in infectious medicine. In this short review, the acute illness which results from new important zoonotic pox infections such as monkeypox, cowpox, raccoon pox and buffalopox is discussed and summarized.

## 1. Introduction

Pox is an important infection that can cause the acute illness with dermatological manifestation. The well-known human pox infections are pox, smallpox[1] and chickenpox[2]. Apart from the well-known pox infections, the emerging zoonotic pox infections become interesting new issue in infectious medicine. In this short review, acute illness resulting from new important zoonotic pox infections such as monkeypox, cowpox, raccoonpox and buffalopox will be discussed and summarized.

## 2. Raccoon pox infection in human

Raccoon pox is an important animal virus. For human beings, there are few reports about this pox infection. The first report in human is by Rocke *et al*[3]. They reported a human exposure to a recombinant raccoon poxvirus. In this patient, Rocke *et al* found

that “within 9 days, the patient developed a small blister that healed within 4 weeks. Raccoon poxvirus was cultured from the lesion”[3]. The observed acute illness in raccoon pox infection is not different from the general clinical problem in human infection by any other viruses in pox group.

## 3. Cowpox infection in human

Cowpox can cause human infection. The disease has been known for many decades. The disease is zoonotic from cat, not a cow[4]. Direct contact is the cause of getting zoonotic infection. In cat, the virus can cause lung infection but it will cause acute illness with “a local nodular dermatitis at the inoculation site” in human case[5].

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**How to cite this article:** Wiwanitkit S, Wiwanitkit V. Atypical zoonotic pox: acute merging illness that can be easily forgotten. J Acute Dis 2018; 7(2): 88-89.

Enlarge lymph node and high fever can also be seen[6]. Severe ocular infection can also be seen in some cases[7]. Cat immunization against this infection is available and it is suggested that cat owners should be informed about the zoonotic risk[8]. A recent report by Borisevich *et al* from Russia noted that a decrease of population immunity to pox in the population of Russia caused by cancellation of pox immunization, hidden circulation of cowpox virus in various species of rodents, as well as lack of vigilance to pathogenic orthopoxviruses in healthcare workers were noted to create the real preconditions for the emergence of infection of humans caused by cowpox virus[9].

#### 4. Monkeypox infection in human

Human monkeypox is considered a new emerging virus infection [10]. The endemic area of the disease is in Africa. Visiting forest is the main risk factor for getting the infection[11].

The co-infection between monkey pox and varicella is also reported[12]. Focusing on the clinical feature of the human monkeypox infection, the patients usually have acute illness. Kalthan *et al* found that fever and rash were the main symptoms of the disease. Lymphadenopathy was present in 54.5%[13]. At present, the new diagnostic test kit is also available for help confirmation and diagnosis of the infection[14]. The important concern at present is the recent report on extended human to human transmission of monkeypox infection[15].

#### 5. Buffalopox infection in human

Human buffalopox is another uncommon zoonotic virus infection. The disease is usually due to contact with buffalo and the milker is the common infected group. The most recent outbreak occurred in India[16-17]. In the report on human outbreak in India, Bhanuprakash *et al* noted that milkers developed pox-like lesions on the hands, forearms and forehead accompanied by fever, axillary lymphadenopathy and general malaise[16].

#### 6. Goat-pox infection and sheep-pox infection in human

The possible anthro-po-zoonotic infection has been mentioned for a long time[18]. Nevertheless, there is still no confirmation on the epidemic or outbreak. An important explanation might be the good control of disease in animal, which can also be reflected by the trend of decreased incidence of Q-fever as seen in Taiwan[19].

For the sheep-pox infection, there is an interesting indexing case on a man who get infected by contact with sheep carrying ecthyma contagiosum lesions and confirmed by immunodiagnosis[20].

#### 7. Conclusion

Many new emerging zoonotic pox infections exist at present. Those zoonotic infections are usually forgotten. Sometimes, the infection can be transmitted by pet and it is an important issue to promote health education for general people regarding the risk of atypical zoonotic pox infections.

#### Conflict of interest statement

The authors report no conflict of interest.

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