#160 Monkeypox outbreak in Blackpool

Clinical presentation, contact surveillance, post-exposure prophylaxis and outcomes.

Blackpool Teaching Hospitals NHS

Public Health England

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Introduction

Monkeypox is a rare zoonotic infection, causing human disease similar to but usually milder than smallpox. Cases outside of Africa are extremely rare, with only one outbreak recorded in 2003 in the USA involving exposure to infected animals.

Cases

On 6th September 2018 a 36 year old male with monkeypox was admitted to Blackpool Victoria Hospital following recent travel from an endemic area in south Nigeria, where he had a history of ingestion of bush meat as well as contact with a possible human case of monkeypox. Symptoms had developed on the day of travel from Nigeria (4th September) and at the time of admission to hospital he was noted to have multiple skin lesions and lymphadenopathy. These lesions were mainly on the face, but also concentrated in the genital region (which led to some early diagnostic confusion).

This case was initially admitted through A&E to the Acute Medical Unit where standard universal barrier precautions were implemented. The patient was transferred to the isolation ward on 7th September and standard universal precautions were continued. These were upgraded to full protection with FFP3 equivalent respiratory isolation when a clinical diagnosis of suspected monkeypox was made on 10th September. The patient was transferred to the Liverpool Airborne High Consequence Infectious Disease (HCID) Unit. Diagnosis was confirmed by PCR on specimens sent to the Rare and Imported Pathogens Laboratory (RIPL) at Porton Down.

A secondary case of monkeypox was subsequently diagnosed in a female Health Care Worker who was based on the Blackpool isolation ward. This individual was one of three who had experienced "high risk" exposure through dealing with bed linen and clothing contaminated with monkeypox virus from visible skin lesions from the index case shortly after his admission to the ward. She had received smallpox vaccination as post exposure prophylaxis on 13th September, one week after her initial exposure to the index case.

14 days after initial exposure she developed headache and the following day presented to her GP feeling unwell. She was noted to have some suspicious skin lesions and was transferred to the isolation ward for further assessment. She was febrile and had characteristic lesions of monkeypox emerging on her neck, face and hands. She was transferred to Newcastle Airborne HCID Unit, and the diagnosis of monkeypox was confirmed by the RIPL. Her clinical disease presentation was milder than that seen in the index case.

This case represents the first instance of human to human transmission of monkeypox outside of Africa.

Methods

Categorisation of Contacts:

Contacts were categorised into 3 groups according to their perceived exposure risk (High, Intermediate, and Low) as defined by Public Health England (PHE).

Surveillance:

This was co-ordinated by PHE and the North West Health Protection Team. Demographic and clinical data was recorded for all contacts. Active surveillance was instituted for high and intermediate risk contacts for a period of 21 days post contact (representing the maximal incubation period for monkeypox), consisting of daily communication with contacts via text message to ascertain their clinical health.

Post Exposure Prophylaxis:

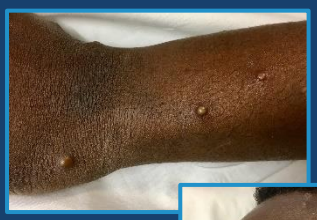
High and intermediate risk contacts under active surveillance were offered a 3rd generation smallpox vaccine (IMVANEX® - Modified Vaccinia Ankara-Bavarian Nordic Live virus [MVA-BN]) by subcutaneous injection. This is a non-replicative vaccine without the systemic effects associated with previously available live Vaccinia virus preparations which are administered by cutaneous scarification, and without the risks of disseminated disease from live, replicating virus. It may be safely administered to those with eczema and with immunosuppression.

Contact Monitoring:

Contacts with high and intermediate risk exposures were placed under active surveillance, and were asked via a daily SMS text message about specific symptoms of fever, headache, muscle ache, backache, swollen lymph nodes, chills, exhaustion or rash which are typical features of the prodromal illness and clinical presentation of monkeypox. Any response in the affirmative, or a failure to respond resulted in a return phone call from a PHE advisor to gain further clinical details and to determine any further appropriate action.

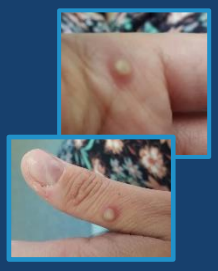
All episodes of clinical illness that were reported among contacts within the 21 day incubation period were recorded.

Clinical features of rash (index case):



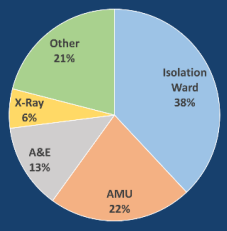
The early skin lesions are vesicles, which form into pustules that typically have an umbilicated centre. Their size can be variable.
The skin lesions ulcerate and heal with crusting and scabbing.

Lesions on hands of Case 2:



IMVANEX® 3rd generation smallpox vaccine used for Post exposure prophylaxis:

Contact exposure location in hospital HCWs:



Results

Exposures:

Over 200 exposure contacts within the community and health service were monitored. There were 129 hospital-based HCWs and 18 HCWs based elsewhere including a GP surgery.
There were numerous community contacts outside of the hospital setting whose numbers are not detailed below. This included friends/relatives, and those exposed inadvertently (eg other airline passengers, taxi drivers, ambulance paramedics, hospital patients and patients at a local GP practice)

Exposure location in hospital HCWs:

For the 101 hospital HCWs, the exposure occurred in the following clinical areas:

Site	Number
Isolation ward	39
Acute Medical Unit	22
Accident & Emergency	13
X-Ray	6
Other	21

Post Exposure Prophylaxis:

74 HCWs and patient contacts who had high or intermediate risk exposure were offered IMVANEX® smallpox vaccination as PEP. (There were additional community contacts who were exposed and vaccinated separately).
Reasons for declining vaccination included conditions such as intercurrent illness and pregnancy

	Offered	Uptake (%)
HCW	70	59 (84%)
Inpatient	4	4 (100%)

Monitoring and clinical illness in contacts:

PHE instituted both active and passive surveillance for all contacts, but many staff remained anxious about their health, particularly following their colleague's acquired infection.
Nine HCWs required further *ad hoc* local clinical assessment, and numerous direct or telephone queries were fielded by the microbiologist, infection control teams and the Infectious Diseases physician.

Nature of symptoms and outcomes:

	Symptom	Action/Outcome
Hospital HCW	Rash	Transfer to Manchester ID unit, D/C
Hospital HCW	Intercurrent illness ?viral	Hospital assessment, monitoring, PHE liaison
Hospital HCW	?Systemic vaccine reaction	Hospital assessment, monitoring, PHE liaison
Hospital HCW	Mouth ulcers	Hospital assessment, monitoring, PHE liaison
Hospital HCW	Febrile illness	Hospital assessment, monitoring, PHE liaison
Hospital HCW	Mouth ulcers	Reassured, no further action
Hospital HCW	Headache	Reassured, no further action
Hospital HCW	Mouth ulcers	Reassured, no further action
Hospital HCW	Headache	Reassured, no further action

Discussion:

Considerable resources were required to manage this incident, which required multi-level collaboration between local, regional and national departments and agencies. The burden imposed in terms of organisational logistics and costs for our Trust has been significant.

Despite PEP, one HCW developed monkeypox following an exposure that was subsequently categorised as "high risk", emphasising the importance of full protective isolation for any possible cases.

Monkeypox may present in a variety of clinical settings in primary and secondary care. Clinicians need to remain alert to its clinical features and possible presentations, such as genital lesions.

Trusts should ensure that the relevant National and local policies and guidelines are put in place to ensure any future UK monkeypox cases can be rapidly detected, isolated and managed

Acknowledgements:

We are grateful to the cases for consent to use their photographs in this presentation, and wish both patients a full recovery.

We also extend our thanks to the numerous individuals and teams involved in the diagnosis, care, management and surveillance of the cases and the contacts, including:
Blackpool NHS Trust Management, Nursing and Microbiology Laboratory services,
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The Rare and Imported Pathogens Laboratory (RIPL),
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