

Disseminated adenovirus Type 7 infection causing acute respiratory distress in immunocompetent adults: two cases from an intensive care unit in North West England

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INTRODUCTION

Disseminated adenovirus disease, especially related to adenovirus Type 7, is well described in immunocompromised hosts and can cause significant morbidity and mortality. Rarely, it also affects immunocompetent hosts. We describe two cases of adenovirus disease in immunocompetent hosts admitted to an intensive care unit in a teaching hospital in North West England.

CASE SERIES

Case	Medical history	Symptoms and season	Initial blood results	Radiology findings	Virology results	Adenovirus treatment given & adverse events	Outcome
Case 1: 35 year old female	Asthmatic, obese, schizophrenia	History of URTI and LRTI symptoms Presented in peak influenza season	Lymphopenia and mildly raised CRP No initial renal dysfunction	CXR: bilateral consolidation which worsened during admission (Figure 1)	Throat swab: adenovirus PCR positive Broncho-alveolar lavage: adenovirus PCR positive at 5.8×10^8 gEq/ml EDTA plasma: adenovirus PCR positive at 9.5×10^6 gEq/ml Adenovirus species B type 7 by genomic sequencing	Cidofovir – renal impairment requiring RRT Consideration for ECMO but not initiated due to improvement	Discharged from critical care
Case 2: 73 year old male	High blood pressure, Renal stones	History of general malaise and diarrhoea Presented outside of influenza season	Lymphopenia and mildly raised CRP No initial renal dysfunction	CT chest: left-sided pneumonia and bilateral pleural effusions (Figure 2)	Throat swab: adenovirus PCR positive Broncho-alveolar lavage: adenovirus PCR positive at 7.5×10^9 gEq/ml EDTA plasma: adenovirus PCR positive at 2.0×10^6 gEq/ml Adenovirus species B type 7 by genomic sequencing	Cidofovir – renal impairment requiring replacement therapy IV immunoglobulins Consideration for extra-corporeal membrane oxygenation but abandoned due to futility	Died due to multi-organ failure

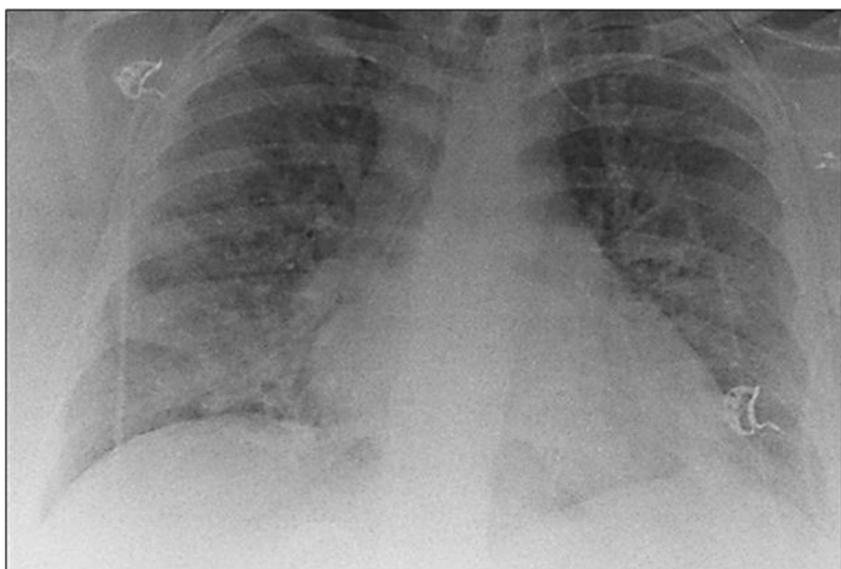


Figure 1 – Chest radiograph of Case 1



Figure 2 –CT chest of Case 2

DISCUSSION

Human adenoviruses are DNA viruses of the *Adenoviridae* family grouped into 7 species (A to G) consisting of over 70 types. They are associated with infections of the respiratory and gastrointestinal epithelial tissues. The rare cases we report highlight that clinical and radiological features of disseminated adenovirus affecting the respiratory system are similar to other infective causes of pneumonia and ARDS. Adenovirus identification is best achieved by PCR and, in patients with a clinically compatible syndrome and no other identified aetiology, a positive adenovirus PCR results can support diagnosis. Although treatment is predominantly supportive, early cidofovir use may improve outcomes but is limited by nephrotoxicity.

CONCLUSIONS

- Adenovirus infections can cause severe disease in immunocompetent adults
- Respiratory adenoviral disease can mimic ARDS/pneumonia due to influenza