

## A case of post-infectious glomerulonephritis following infection with influenza A subtype H1N1

Tushar Jain · Louisa Hemington · Bemigho Etuwewe

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Sirs,

It was fascinating to read the recent publication by Ghiggeri et al. [1] that haematuria can be a prodrome for H1N1 infection in children which, interestingly, is pertinent to a recent case of acute glomerulonephritis seen in our centre. Acute glomerulonephritis is most commonly post-infectious and caused by Streptococcal throat infection (serotype 12) and less frequently, skin infection (serotype 49). Hepatitis A, B and HIV infections are well known to cause acute glomerulonephritis but infection with the H1N1 subtype of Influenza A (Swine flu) has not been reported in paediatric literature.

We would like to present a case of a previously fit and well 14 year old male who presented mid-winter, during the recent swine flu pandemic, with a 3 day history of macroscopic haematuria and 5 days of flu-like symptoms. He had a history of sore throat about 4 weeks previously. There was no history of abdominal pain, dysuria or trauma and no recent use of non-steroidal anti-inflammatory medication. His sister and mother had been unwell with flu. On admission he had normal observations as were his general and systemic examinations except for a blood pressure of 144/67 mmHg. Examination of his throat revealed inflamed tonsils but no exudates. His repeat blood pressure was 117/61 mmHg and remains in normal range. Initial urine dipstick using clinitek 50<sup>®</sup> was negative for glucose, ketones, nitrites and leucocytes but showed 'large' blood, >300 mg/dL protein with a protein creatinine ratio of 35. The following immunological tests were negative or within normal range: immunoglobulins, anti-neutrophil cytoplas-

mic antibody (ANCA), antinuclear antibody (ANA), anti-streptolysin (<200units/ml), anti-DNase. Glandular fever screen was negative. The full blood count, liver function test, coagulation screen, serum electrophoresis were normal. Renal ultrasound scan showed bilateral normal sized kidneys with hyper reflective cortex and reduced sinus fat suggestive of an infectious process. A presumptive diagnosis of post-streptococcal glomerulonephritis was made and a course of oral phenoxymethylpenicillin was commenced. Bacterial throat swab was negative for *Streptococci spp.* and viral throat swab was positive for H1N1 'Swine flu' by real time reverse transcriptase PCR. His condition improved on the ward and was discharged 2 days later with appropriate follow-up arrangement. Two months later the serum creatinine was 114  $\mu\text{mol/L}$  and he presently sees a paediatric nephrologist with persistent microscopic haematuria.

Asymptomatic glomerulonephritis have been reported in adults infected with influenza A and B viruses. There have been case reports of avian influenza A virus (H5N1) infection causing severe renal impairment [2]. At the height of the recent 2009 swine flu pandemic, a majority of children affected by the H1N1 virus had mild symptoms, mainly respiratory. However, studies have suggested that H1N1 infection can affect various organs like lungs, heart, liver and spleen. Prior to the recent report by Ghiggeri et al. of two paediatric cases of H1N1 influenza presenting with asymptomatic haematuria as a prodrome [1] renal involvement had never been reported. Although Ghiggeri's report suggests that macroscopic haematuria may be a prelude to a H1N1 infection, our case suggests that H1N1 infection may have a causative link to the development of post-infectious acute glomerulonephritis in children and highlights the importance of investigations for viral infections in a child with haema-

T. Jain (✉) · L. Hemington · B. Etuwewe  
Diana Princess of Wales Hospital – Paediatrics,  
Scarcho Road, Grimsby,  
South Humberside DN33 2BA, UK  
e-mail: drtusharjain@yahoo.co.uk

turia. We conclude that in the presence of a flu outbreak like the recent H1N1 pandemic, viral throat swab studies for rapid viral detection, especially for H1N1, should be considered in a child with coryzal symptoms presenting with haematuria; therefore early detection of presence of viral etiology may reduce the use of antibiotics for presumptive post-streptococcal glomerulonephritis.

## References

1. Ghiggeri G, Losurdo G, Ansaldi F, Canepa A, Magnasco A (2010) Two cases of swine H1N1 influenza presenting with haematuria as prodrome. *Pediatr Nephrol* 25:779–780
2. Watanabe T, Yoshikawa H, Abe Y, Yamazaki S, Uehara Y, Abe T (2003) Renal involvement in children with influenza A virus infection. *Pediatr Nephrol* 18:541–544