

Parainfluenza virus 4 presenting with pericardial effusion in an immunocompetent child

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To the Editors,

Human parainfluenza viruses (HPIVs) are common respiratory tract pathogens that can infect persons of any age. They are enveloped, negative-sense RNA viruses that belong to the subfamily *Paramyxovirinae* of the family *Paramyxoviridae*. There are four genetically and antigenically different types, HPIV types 1 to 4 (HPIV-1 to -4) [1]. Although HPIV-4 has been regarded as less clinically important and associated with milder respiratory illness, serological studies have shown that it may account for as much as 3% of all respiratory tract infections [2] and demonstrated 50% to 90% seroprevalence in children and young adults [3]. As it is recovered less often in cell culture and reported in association with mild respiratory disease, HPIV-4 is not included in the routine panels of respiratory virus antigen detection on nasopharyngeal aspirates (NPAs) and other respiratory specimens collected in most clinical virology laboratories [1]. For this reason HPIV4 might be detected less often and this could lead to an underestimation of its clinical significance. We report a previously healthy child with HPIV 4 infection presenting with pericardial effusion.

A 9-year-old girl was admitted to Ankara Pediatric Hematology Oncology Research Hospital with sore throat, myalgia and lethargy. Physical examination was normal except for tachycardia (114/min). Laboratory studies revealed elevated creatinine kinase (CK) 2419 unit/L (96-140 unit /L), myoglobin 335 ng/ml (10-65), troponin T 0.03 ng/ml (0-0.2), troponin

I 0.05 ng/ml (0-0.1), aspartate aminotransferase (AST) 97 U/L (6-21), alanine aminotransferase (ALT) 45 U/L (7-56). Other laboratory tests such as hemogram and C reactive protein and erythrocyte sedimentation rate were within normal limits. Chest x-ray resulted normal. Electrocardiogram was within normal limits. Echocardiography was performed as tachycardia and creatine kinase (CK) elevated levels could not be explained and it showed pericardial effusion of 10 mm size behind the right atrium reaching 15 mm in the basal region. Ibuprofen at a dose of 10mg/kg/day was initiated. Virologic studies from serum for the etiology of pericardial effusion did not yield any positive findings. Tuberculin skin test was negative. Abdominal ultrasonography was normal. Repeated echocardiography on the next day showed diminished pericardial effusion in size. Multiplex viral PCR, Fast Track Diagnostics/ Respiratuar Pathogen 21 (Fast Track Diagnostics, Junglinster, Luxemburg), kit testing for Influenza virus A (INFA), INFA/SwH1, Influenza virus B (INFB), Rhinovirus (RV), Respiratory Syncytial Virus A/B (RSV A/B), Parainfluenza virus 1/2/3/4 (PIV-1/2/3/4), Coronavirus OC43/ 229E/ NL63/ HKU1, Parechovirus (HPeV), Enterovirus (EV), Adenovirus (AV), Human Bocavirus (HboV), Human Metapneumovirus (hMPV), from nasal aspirate was positive for human parainfluenza virus-4 (hPIV-4)HPIV-4 were performed. Cytomegalovirus, hepatitis and Coxsackie viruses tests did not yield any positive results. The patient was discharged with resolution of the

pericardial effusion one week after admission. No relapse was observed in follow-ups.

Due to difficulties in isolating HPIV-4 and the general unawareness of its clinical significance, the prevalence of HPIV-4 may have been underestimated. There are few reports highlighting outbreaks of respiratory infections [1], on pericarditis in immunocompromised patients [4] and on pericardial effusion due to HPIV-3 [5]. In immunocompetent individuals, HPIV-4 is not typically associated with severe respiratory infection. To the best of our knowledge this is the first case reported on atypical presentations of HPIV-4 in an immunocompetent child.

This case highlights the potential pathogenicity of HPIV-4 even in immunocompetent children although the course was benign for this patient. One of the limitations of the patient's follow up was that pericardial effusion could not be directly tested as it regressed spontaneously and a pericardiocentesis for diagnosis would have been too invasive. Since pericardial effusion may not definitively be caused by HPIV-4, we assume that HPIV-4 could be the possible pathogen for this patient as other cases of pericardial effusion due to HPIVs have been previously reported.

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