



# A Human Metapneumovirus Case Who Presented with Pertussis Like Illness

Boğmaca Benzeri Hastalık Kliniği ile Başvuran Bir İnsan Metapnömovirüsü Olgusu

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## Abstract

Human metapneumovirus is one of the most common viruses which cause lower respiratory tract infection in children, throughout the world. It was first isolated from children who had acute respiratory illness in 2001. It usually infects children younger than five years old. Clinical features are mostly cough, rinitis, high fever and wheezing. Herein we report a fifty-days-old infant who presented with a clinical picture similar to whooping cough and whose respiratory polymerase chain reaction test resulted as Human metapneumovirus and culture for pertussis resulted as negative. In this case, we want to emphasize that, Human metapneumovirus can cause pertussis-like illness in children.

**Keywords:** Child, human metapneumovirus, pertussis like illness

## Öz

İnsan metapnömovirüsü, tüm dünyada, çocuklarda alt solunum yolu enfeksiyonlarına yol açan en sık virüslerden biridir. İlk kez 2001 yılında akut respiratuvar hastalığı olan çocuklarda saptanmıştır. Sıklıkla beş yaşından küçük çocukları etkiler. Klinik özellikler sıklıkla öksürük, burun akıntısı, yüksek ateş ve hışıltı şeklindedir. Burada iç çekme ve öksürük yakınmaları ile başvuran ve solunum yolu viral polimeraz zincir reaksiyonu insan metapnömovirüsü olarak sonuçlanan ve boğmaca kültüründe üreme olmayan 50 günlük bir bebek olgu sunduk. Bu olgu ile insan metapnömovirüsü'nün çocuklarda boğmaca benzeri hastalığa yol açabileceğini vurgulamak istedik.

**Anahtar Kelimeler:** Boğmaca benzeri hastalık, çocuk, insan metapnömovirüsü

## Introduction

Pertussis is a *Bordetella pertussis*-induced respiratory tract infection which is more common in children who are not vaccinated especially below two months of age, accompanied by consecutive cough in the paroxysmal stage and whooping attacks pursuant to blushing and bruising. Adenovirus, respiratory syncytial virus (RSV), *Mycoplasma pneumoniae*, *Chlamydomphila pneumoniae* are known to cause pertussis-like disease (1). Human metapneumovirus (hMPV) is a rare pertussis-like disease agent. In 2001, hMPV found in children

with acute respiratory disease in the Netherlands is an enveloped, single-stranded, negative-pole RNA virus. It often causes fever, rhinitis, otitis media, cough and respiratory distress in children under five years of age (2). In this article, a male 50-day patient who was admitted with pertussis symptoms was presented because of the diagnosis of hMPV infection.

## Case Report

A fifty-day-old, full-term newborn and pre-healthy male patient was admitted to our hospital with the complaint of fever and cough for two days. It was learned that his cough

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had recurrent and had dry characteristics and his cough was accompanied by bruising around the lip. His own and family history were unremarkable. In the physical examination, the general condition was good, conscious, the body temperature was 36.3°C, respiratory rate; 60/min, oxygen saturation; 100%. The patient had subcostal and intercostal retractions and there were crackles on the bilateral basal hemitorax by auscultation. During the examination it had seen that the patient repeatedly coughed and simultaneously had cyanosis around the lip. In laboratory examination; white blood cell count  $9.58 \times 10^3 \mu\text{L}$  (72% lymphocyte, 18% neutrophil, 10% monocyte), hemoglobin level 11.6 g/dL, platelet count  $542 \times 10^3/\text{mm}^3$ , the level of C-reactive protein: 5.34 mg/L. Liver and kidney function tests were within normal ranges. On the anteroposterior chest X-ray, parachardiac infiltration in the right lung and hyperaeration of the lungs were observed.

He was hospitalized in pediatric infectious diseases unit with the initial diagnosis of pertussis-like disease, applying droplet isolation. After the oxygen support and hydration was achieved, pertussis culture from the nasopharyngeal swab specimen and airway viral polymerase chain reaction (PCR) panel were sent. For possible bacterial tracheitis and pertussis, empirically, intravenous amoxicillin-clavulanic acid (90 mg/kg/day, IV) and clarithromycin (15 mg/kg/g, IV) were commenced to the case. Echocardiography was normal. On the fourth day of hospitalization, the patient's complaint of uninterrupted coughing and cyanosis regressed, and oxygen saturation ranged from 95% to 97%; in the control examinations, lymphocytosis and thrombocytosis were observed to have regressed. On the third hospitalization day of the case, viral PCR of the respiratory tract resulted as hMPV positive, however, the antibiotic treatment of the case was continued until the pertussis culture resulted. *B. pertussis* had not been yielded on the culture. The patients general condition was good and vital signs were stable, antibiotic treatment was stopped on the eighth day of hospitalization and he discharged with recommendations.

## Discussion

The toxins that have the characteristics of adhesion of the microorganism to the ciliated epithelium, killing epithelial cells and delaying the response of the immune system are responsible from the findings of pertussis disease, but the toxin causing the classic cough has not been shown yet. A lifelong immunity against pertussis cannot be provided through the the disease or vaccination (1,3). Due to the rapid decline of the antibodies passed through the mother, infants are the most sensitive age group against the disease until the second month that the active vaccination is started (3). Except for paroxysmal cough attacks in children younger than three

months; breath hold, apnea, cyanosis can also be seen, but there are no findings such as tachypnea, ral and rhonchus. In laboratory findings, leukocytosis dominated by lymphocytosis and thrombocytosis are observed and are directly proportional to the severity of the clinic (1,3). Our case, he was smaller than two months and admitted for paroxysmal cough attacks, had lymphocytosis and thrombocytosis, but he had been diagnosed initially with pertussis-like disease due to tachypnea and crackles on respiratory examination.

Factors known to cause pertussis-like disease are adenovirus, RSV, *M. pneumoniae*, *C. pneumoniae*. Human metapneumovirus is more severe in children younger than two years and causes fever, tachypnea, cough, runny nose, wheezing and hypoxia and it is the cause of an upper and lower respiratory tract infection (4). While the incidence of hMPV is reported to be between 1.5% and 25% in the world, the incidence of hMPV in patients with acute lower respiratory tract infection in the hospital was found to be 10.8%-13% in the studies performed in our country (4,7,8). In recent studies, data have been obtained that hMPV causes pertussis-like disease. In a study of 232 children with median age of three years who presented with pertussis-like disease clinic, nasopharyngeal swab samples taken from patients were evaluated by PCR; In 9.9% of patients, hMPV was found to be positive alone and no co-infection was observed (9). In Iran between 2014 and 2015, a study that nasopharyngeal swab specimens were taken from 100 patients who applied to hospital with the symptoms of pertussis-like disease under two years of age and evaluated with PCR has showed that the incidence of hMPV was reported to be 10% and it did not accompany other infections (10).

Our case applied due to pertussis-like disease symptoms and *B. pertussis* reproduction was not observed in the nasopharyngeal specimen obtained but hMPV was positive in respiratory tract viral PCR.

## Conclusion

In the case of fever, respiratory signs and laboratory findings accompanying typical pertussis symptoms are observed and laboratory findings are not compatible with pertussis; other agents that cause pertussis like illness should be investigated and it should be kept in mind that hMPV may cause pertussis-like disease.

**Informed Consent:** Oral consent was obtained from the patients relatives.

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