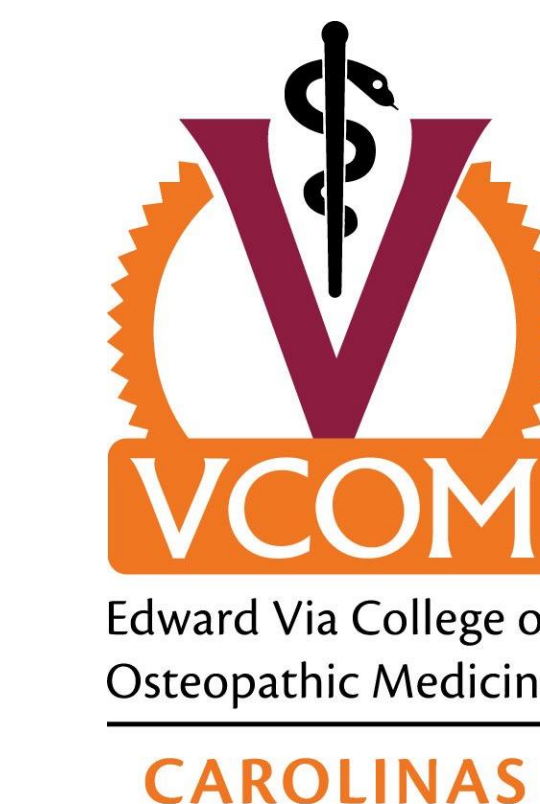




Human Metapneumovirus Causing Pertussis-like Syndrome First Reported Case in Medical Literature

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Introduction

- Human metapneumovirus (hMPV) is an emerging causative agent of respiratory illness in children. Typical presentation of hMPV resembles that of respiratory syncytial virus (RSV) or influenza, resulting in upper and lower respiratory tract infections.
- Bordetella pertussis* is another common causative agent of respiratory illness in children, typically presenting with a classic “whooping cough”. This characteristic cough may be seen with a variety of other pathogens, in which case the illness is termed Pertussis-like Syndrome.
- Until now, Pertussis-like Syndrome has never been seen with a sole infection of hMPV as the causative agent.

Pathogen Comparison

	hMPV	<i>Bordetella pertussis</i>	RSV
Fever	Common	Rare	Common
Paroxysmal Cough	Rare	Common	Rare
Post-tussive Emesis	Rare	Common	Rare
Wheezing	Common	Rare	Common
Apnea	Rare	Common	Common

Case Presentation

- Following 2 weeks of outpatient care for acute bronchiolitis, a 9-week-old presented to the ED with a worsening paroxysmal cough. The coughing episodes coincided with brief hypoxia, increased respiratory efforts, and a final apneic period. Initial workup revealed leukocytosis, negative nasopharyngeal culture and gram stain, negative CXR, and sole positive hMPV on FilmArray Respiratory Panel (FARP).
- After 6 days of supportive oxygen and breathing treatments the cough worsened, now with retractions, tachypnea, tachycardia, and wheezing. Each episode lasted 3-5 minutes, ending with cyanosis, loss of muscle tone, and apnea, followed by a characteristic “whoop”. The patient was thus transferred to the PICU.
- A second FARP showed identical results, but due to symptomology, the patient was placed on Azithromycin and Prednisolone for broad coverage. Additional specimens were collected for *Bordetella pertussis* and *Bordetella parapertussis* PCR and culture. While awaiting the results, the patient continued antibiotic and supportive treatment.
- Improvement was seen, with persistent cough no longer accompanied by cyanosis, whooping, or paroxysm. The patient was discharged with instructions to complete the treatment course. The final test results showed no sign of *B. pertussis* infection, further confirming Pertussis-like Syndrome with a sole cause of hMPV.

Publication

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Discussion

- Human metapneumovirus has been shown in animal models to have a similar pathogenic process to RSV, with viral replication in the upper respiratory tracts causing prolonged airway inflammation, epithelial hyperplasia and increased mucous production.
- In contrast, *Bordetella pertussis* infections typically present with paroxysmal coughing episodes causing brief periods of harmless apnea in what appears to be a healthy child. Cyanosis and gasping are common, with fever rarely occurring.
- Our patient presented initially with a classic upper respiratory infection accompanied by fever, cough, and wheezing. He then developed a classic pertussis-like whooping cough with periods of apnea. With all *B. pertussis* testing negative, and sole positive testing for hMPV infection, this led to a previously unheard of diagnosis of Pertussis-like Syndrome from hMPV.

Conclusion

- Preventative measures should be the primary focus when dealing with an hMPV infection, to eliminate further spread.
- No current antiviral treatment is available, therefore treatment consists of primarily supportive care.
- A broad differential must always be utilized in diagnosing childhood respiratory illnesses to further eliminate unneeded exposure to antibiotic treatment.