Detection of Human Bocavirus 2 DNA from a Girl with Plastic Bronchitis

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Abstract: Human bocavirus 2 genome was detected from the mucus secretion of a 4-year-old girl afflicted by plastic bronchitis. Since human bocavirus 1 has been detected from intratracheal aspirate and acute-phase serum from a patient with plastic bronchitis, human bocaviruses 1 and 2 might be directly or indirectly responsible for inflammation of the lungs followed by mucous plugging.

Key words: Human bocavirus, plastic bronchitis, polymerase chain reaction.

A 4-year-old girl, previously healthy, was admitted to Fukui Prefectural Hospital with a 3-day history of cough, wheeze and fever. She had no asthmatic episodes. A chest roentgenogram showed complete atelectasis in the left lung, and computed tomography showed occlusion of the main left bronchus, atelectasis and pleural effusion of the left lung. Soon after admission, respiratory failure with acute hypercapnia occurred. She was mechanically ventilated. Flexible bronchoscopy was performed on days 2 and 3 after admission, and extremely thick mucus secretions were found to have obstructed the main left bronchus. After removing the mucus secretions, the clinical condition of the patient dramatically improved and she was discharged from the hospital after 12 days. Histopathology of the mucus secretions revealed a large quantity of eosinophils and bronchial casts. The intratracheal aspirate was subjected to (RT-)PCR screening for 17 viral pathogens (respiratory syncytial virus, human metapneumovirus, human rhinovirus, human bocaviruses 1-4, parainfluenza viruses 1-3, influenza A virus, influenza B virus, human enterovirus, human coronaviruses, adenovirus, KI

polyomavirus and WU polyomavirus) as previously described [1]. HBoV2 (Human bocavirus 2) and influenza B virus were detected from the mucus secretion. The sequence of human bocavirus 2 was deposited in GenBank under accession number KC425462.

Plastic bronchitis is an uncommon disorder characterized by the formation of bronchial casts. It is associated with various diseases including congenital heart disease, inflammatory lung disease and sickle-cell anemia [2]. Our patient had no episode of wheezing before hospitalization and no underlying diseases. HBoV2 DNA was detected from the intratracheal aspirate as well as influenza B DNA. At least seven cases of plastic bronchitis have been reported to be associated with influenza A (H1N1) 2009 virus infection [3]. On the other hand, there has been no report of plastic bronchitis being associated with influenza B virus infection except for one case that had recurrent plastic bronchitis with influenza A (H1N1) 2009 and influenza B virus infections [4]. HBoV2 was predominantly detected from fecal samples and was thought to be involved in the enteropathogenesis [5]. Recently, it was found that HBoV2 was infrequently (0.6%) detected from

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nasopharyngeal swab samples from patients with respiratory tract infection [1]. In a 14-month-old boy with plastic bronchitis, HBoV1 DNA was detected from intratracheal aspirate and acute phase serum [2]. Although the roles of HBoV1 and HBoV2 in the pathogenesis of plastic bronchitis are unknown, HBoV1 and HBoV2 might be directly or indirectly responsible for inflammation of the lungs followed by mucous plugging.

There has been no previous case report of plastic bronchitis associated with HBoV2. This case report has value for knowing the pathogenesis of HBoV2 in respiratory tract infection.

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