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Short Communication

# Fatal Infection with Respiratory Syncytial Virus Type B in 2 Years 9 Months Infant

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## Abstract

On February 6, 2015, a two years and nine months child was admitted to hospital, having bronchopneumonia symptoms, but after four hours the patient died. Lung fragments were investigated in Conclusion Institute.

Detection of Influenza A and B viruses was negative; of other respiratory viruses with Seegene Kit and Invitrogen Kit – lung fragments 2 and 4 positive for RSV type B; sequencing – 100% identity between fragments 2 and 4; 97-98% identity with several sequences from GenBank.

In this case, the hRSV type B infection induced a severe illness with fatal result to an infant with no other associated diseases.

***Keywords:*** *Respiratory Syncytial Virus Type B; Real-Time PCR; Reverse Transcription Polymerase Chain Reaction (RT-PCR); Bronchopneumonia*

## Introduction

Acute respiratory infections cause an average of 3 - 4 illness episodes per year for every child attending school or kindergarten. Human Respiratory Syncytial Virus (RSV) is one of the viruses involved in such episodes and nearly all children will have been infected with this virus by 2 - 3 years of age [1]. From the infants who develop bronchiolitis and need hospitalization, about 40 - 45% are RSV infected [2]. The RSV type B, however, usually induces a mild pattern of disease [3].

On February 6, 2015, a two years and nine months child was admitted to a pediatric county hospital, having bronchopneumonia symptoms (with sudden onset, cough, dyspnea). Investigations and early treatment started (including antibiotics), but after four hours the patient died. The morpho-pathological exam revealed an interstitial pneumopathie. Post-mortem, lung fragments were sampled and investigated in Cantacuzino Institute. Acid nuclei samples isolated from four lung fragments (1A, 2B, 3C, 4D), recovered from exhumed body (after seven days) using ARN extraction with TRIzol (Invitrogen) by a modified Chomczynski method were submitted subsequently for routine viral diagnostics: in-house real time RT-PCR for influenza viruses type A and type B (WHO Manual on Animal Influenza Diagnosis and Surveillance, 81 WHO/CDS/CSR/NCS/2002.5, Rev.1, CDC Realtime RT-PCR (rRTPCR) protocol for 82 Detection and Characterization of Swine Influenza (version 2009); CDC REF. #I-007-05 83 (reaction protocol was done according to WHO instructions). multiplex classic RT-PCR for other viruses (commercial kit Seegene): RSV type A and B, Parainfluenza, Metapneumovirus, Adenovirus, Rhinovirus, Enterovirus, Bocavirus, or in-house RT-PCR (using Super Script III Platinium One Step Quantitative RT-PCR System reagents) with the primers described by Collins., *et al* [4]. Virus sequences (212 bp) with the primers described by Collins PL., *et al*. [5] were derived from two specimens by Sanger method of SH gene of RSV type B for confirmation and identification of RSV.

## Results and Discussion

RSV type B was identified from two lung specimens (2B and 4D) by the commercial kit (Figure 1a) but also by in-house RT-PCR (Figure 1b). Analyses of sequences (Table 1) revealed a 100% identity between fragments 2 and 4 and 97-98% identity with several

sequences from GenBank (e.g: hRSV B/Homo sapiens /USA/90E-181-01 (gi/727880010); hRSV B/GZ/13-730 (gi/733370580); hRSV Kilifi_9697_16_RSV B (gi/751251450)).

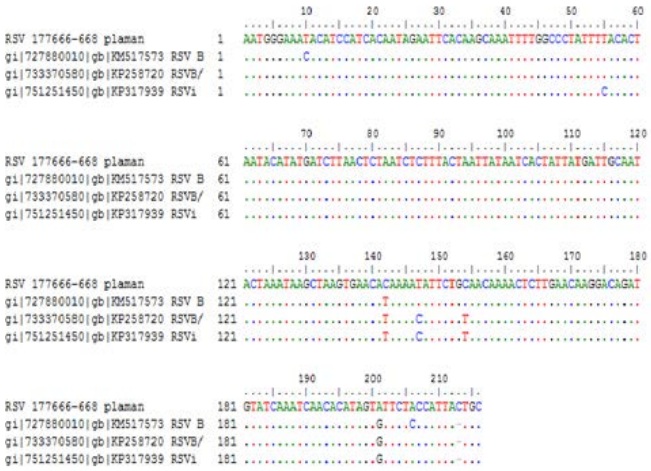


***Table 1:*** *Analyses of sequences of lung fragments 2B and 4D Plaman = Lung.*

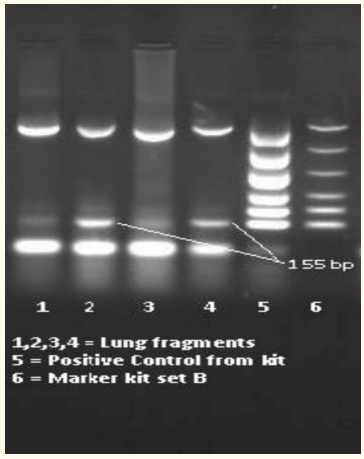


***Figure 1a:*** *Lanes 2 and 4: PCR products of lung fragments 2B and 4D - 155bp (SEEGENE KIT).*

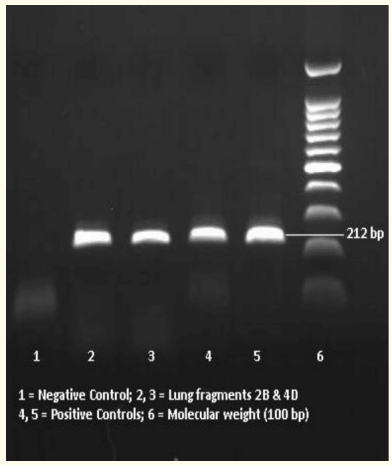


***Figure 1b:*** *Lanes 2 and 3: PCR products of lung fragments 2B and 4D - 212bp - In house RT-PCR with primers described by Collins., et al (1990). The Kit used for RT-PCR was In Vitrogen.*

The rate of hospitalization is usually about 0.3% RSV disease and the fatality rate is very small (less than 1% in otherwise healthy children) and the Type B is generally milder.

## Conclusions

In this particular case, the Human respiratory syncytial virus (RSV) type B infection induced a severe illness with fatal result to a 2 years 9 month old infant with no other associated disease or special condition. RT-PCR proved to be a reasonably sensitive and highly specific method for the diagnosis of RSV even from fragments recovered from exhumed body.

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