# The first report of detection and phylogenetic analysis of Entrovirus D-68 and Rhinoviruses in children under age of 5 years in Iran

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**Background:** Enterovirus D68 (EV-D68) was reported to cause an outbreak of severe respiratory illness in children needing hospital or critical care admission across the United States in 2014. Also, Rhinoviruses are the most common cause of respiratory tract infections in individuals of all ages, causing one-half of common colds annually and 90% of colds during the autumn epidemic season. The goal of this study was to determine frequency and genotype characterization of EV-68 and Rhinoviruses in children under age of 5 years for the first time in Iran.

**Material/methods:** A total of 291 children hospitalized for any respiratory infection between Septemer,2015 and April ,2016 were screened for EV-D68 and rhinoviruses. The presence and quantity of EV-D68 and rhinoviruses in nasal swab samples were determined by Real-Time RT-PCR and nested RT-PCR methods. Positive samples were assessed further for genotype characterization by partial sequence analysis and phylogenetic analysis.

**Results:** A total of 15/291 (5.16%) of samples tested positive for EV-D68, and 61/291(20.96%) cases were positive for rhinoviruses. Mean age was 4.3 and 3.8 years in the EV-D68 and rhinoviruses positive groups, respectively. Children with EV-D68 infection were more likely to have difficulty breathing. There was no significant difference in admission to the critical care unit among children with EV-D68 infection compared with those with rhinovirus infections. Children with EV-D68 infection were more often admitted to hospital, but not significantly. Children positive for EV-D68 or rhinoviruses type C were had same rate of wheezing than rhinoviruses type A and B (odds ratio;2.73 and pvalue;0.04).

**Conclusions:** Rhinoviruses are more frequently detected from children than EV-D68. However, Enterovirus D68 seems to be a more virulent pulmonary pathogen than rhinoviruses, but we could not find a significant difference in need for critical care.

**Table.1.** Odds ratio of Rhinovirus C and EDV-68 in patients with wheezing

| | Odds Ratio (*P*-value) |
|---|---|
| Rhinovirus C vs. Rhinovirus A and B | 3.083 (0.04) |
| EDV-68 vs. Rhinovirus A and B | 5.0 (0.044) |

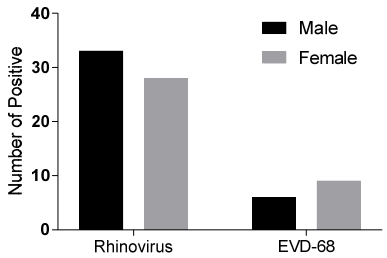


Figure.1. Number of Positives cases by sex

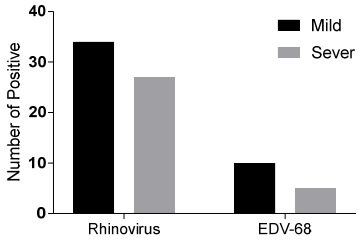


Figure.2. Number of Positives cases by clinical features

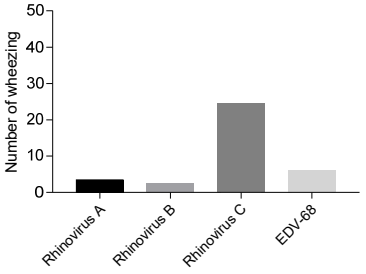


Figure.3. Number of Positives cases by wheezing

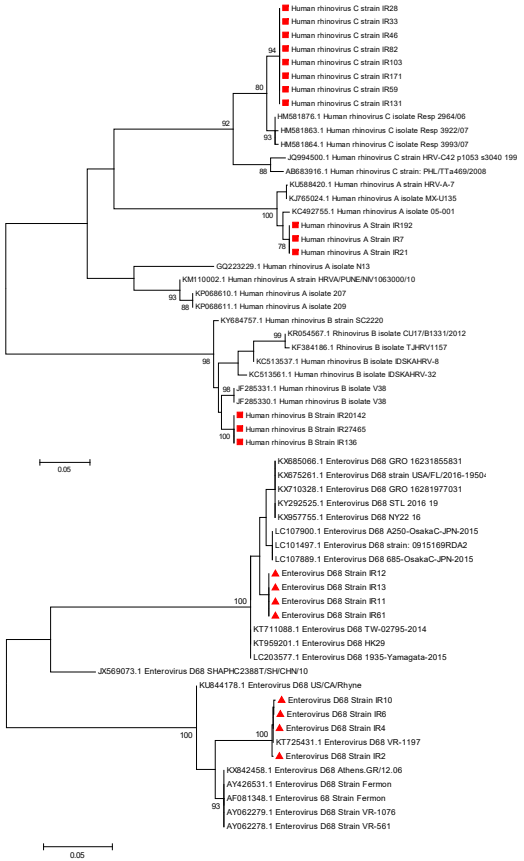

Figure.4. Phylogenetic analysis of Iranian EDV-68 and Rhinoviruses strains

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