

# Pneumocystis jirovecii pneumonia among pediatric inpatients before and after COVID-19 pandemic: molecular diagnosis, predisposing factors, and outcomes in Northeastern Iran

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## Abstract

**Background:** *Pneumocystis pneumonia* (PCP), caused by *P. jirovecii*, is one of the opportunistic fungal infections that can cause life-threatening pneumonia in children with underlying diseases. Due to the similarity of the symptoms of PCP with other lung infections, such as tuberculosis, differential and accurate diagnosis is necessary. The current study investigated the molecular diagnosis of *P. jirovecii*, predisposing factors, and the outcomes, among pediatric inpatients in Northeastern Iran. **Method:** In this study, 180 bronchoalveolar lavage (BAL) specimens were obtained from hospitalized children with respiratory disorders. The specimens were examined using Giemsa stain, and the genomic DNA was extracted according to the protocol of the AmpliSens® kit. Real-time polymerase chain reaction technique was used to detect *P. jirovecii* by the AmpliSens *Pneumocystis jirovecii* ( *carinii*)-FRT PCR kit. **Results:** Among the patients studied, 34 (18.9%) were positive, and 8 (4.4%) were suspicious for the presence of *P. jirovecii*. Among the 34 positive cases, 12 (35%) were related to before, and 22 (65%) were affected during the COVID-19 pandemic. Only 2 cases (5.88%) of the positive cases detected by Real-time PCR method were observed using Giemsa staining. Also, no correlation was observed between positive cases of infection and the sex, the outcomes, and underlying diseases. **Conclusion:** The results showed that PCP has a relatively high prevalence among pediatric inpatients with respiratory disorders. Neutropenia is a significant predisposing factor in these patients. However, there is no correlation between PCP cases and the outcomes and underlying diseases. Most of patients with PCP were affected during the COVID-19 pandemic.

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