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## Letter to the Editor

# Pertussis: a re-emerging or under diagnosed infectious disease?

*Dear Editor,*

Every year, mild, self-limited, to severe cases of respiratory infections are very common, particularly during the winter seasons in the South of Brazil. Respiratory viruses are the most common causes of these infections. However, bacterial agents may also be involved. *Bordetella pertussis* is a well-known cause of respiratory infection, which starts with cold-like symptoms, but contrary to viral infections, progress to more severe disease that does not resolve even after several weeks.

Pertussis is a highly contagious infectious disease, but its spread can be controlled through large-scale vaccination program. It is noteworthy that vaccination did not eradicate this pathogen from the population, although it drastically reduced the number of deaths due to this pathogen. For this reason, *B. pertussis* continues to circulate among our population and is still a cause of whooping cough among infants; especially those who have not yet received the vaccine or did not complete the recommended vaccination scheme.

Recently, we experienced an increase in the detection of *B. pertussis* in nasopharyngeal samples of symptomatic patients. From September to October 2012, 55 nasopharyngeal samples were submitted to our laboratory for the detection of *B. pertussis* by real time PCR. The positivity rate was 62%. Patients' age ranged from 20 days to 8-years-old. Around 30% of the patients were infants less than one-year-old, while the remaining 70% were between 4 and 8-years-old. Symptoms were much more severe among infants, often requiring hospitalization. Older children tended to have milder symptoms, but still needed medical attention. The main clinical findings were fever and prolonged coughing (>2 weeks). Some of the children attended schools were other classmates were also complaining of prolonged coughing and cold-like symptoms.

In our laboratory, the detection of *B. pertussis* is done by SYBR-Green-based real time PCR. Primers targeting the *IS481* repetitive element were designed based on a previous publication.[1] The specificity of the PCR product is checked by melting curve analysis using the LightCycler platform (Roche). To prevent carry-over contamination, all PCR steps were performed in separated rooms using dedicated materials, and by the use of PCR reagents containing UDG/Glicosylase, which acts to degrade any foreign DNA that may have been accidentally introduced into the reaction mix. Previously, by analyzing 455 nasopharyngeal aspirates from symptomatic children collected between May 2007 and June 2008 as part of project to detect respiratory viruses by real time PCR,[2] *B. pertussis* was found in up 6.4% of those samples (unpublished data), underscoring the importance of this pathogen in our population. Moreover, our data confirm that infants who have not been vaccinated or did not complete the vaccination scheme are at risk for pertussis, and this pathogen should be suspected whenever compatible symptoms are present. The other children that seem to be at risk are those 4–8 years old, which may be due to waned immunity towards this pathogen.

Although useful for strain characterization, it is well accepted that culture lacks the necessary sensitivity to detect *B. pertussis*. Molecular methods are replacing culture for the detection of this pathogen, which, besides greater sensitivity, can provide same day results, thus contributing to the correct treatment of the disease and avoiding spread of the bacteria to other persons. Moreover, its exquisite sensitivity can detect the bacteria even after antibiotic treatments or several days after the beginning of the initial symptoms. Whether the increase in the detection rate of *B. pertussis* represents an increase in the infections associated with this pathogen, as observed in other studies,[3] or is simply the result of better detection methods and clinical suspicion remains to be determined. However, it seems clear that the real number of pertussis cases in the South of Brazil may be highly underestimated.

Etiology of respiratory diseases is very important for the correct management of the patients. Confirming the presence of a viral agent can prevent the use of unnecessary antibiotics. On the other hand, correctly establishing the presence of bacterial pathogens, such as *B. pertussis* in a clinical sample from symptomatic patients can substantially reduce the duration of the disease and avoid its spread in the community.

## Conflict of interest

All authors declare to have no conflict of interest.

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