

ABSTRACT

Characteristics of Children with Acute or Stable Asthma Attending Selected Health Facilities in Trinidad and the Association of Respiratory Viral Infections on their Disease

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Asthma is increasing in prevalence. Respiratory viral infections are a major cause for childhood asthma exacerbations in temperate climates. This thesis describes characteristics of children with acute/stable asthma and examines the prevalence and seasonality of respiratory viruses in childhood asthma in tropical Trinidad.

Physician-diagnosed asthmatic children (239), 2-16 years, either (a) presenting to Accident and Emergency (A&E) for nebulization (120) or (b) clinically stable (119) during the previous three months, were recruited. A pilot-tested questionnaire was administered and nasal specimens were collected from seventy (58.3%) of the children presenting to A&E and eighty (67.2%) of the stable children. A novel, high-throughput Respiratory MultiCode polymerase chain reaction (PCR) assay (the University of Wisconsin-Madison and EraGen Biosciences; USA) was used to detect for rhinovirus (RV), parainfluenza virus, enterovirus, influenza virus, respiratory syncytial virus, coronavirus, human metapneumovirus and adenovirus.

Most children (198; $p < 0.001$) had a positive family history particularly of maternal asthma (116/198; $p < 0.001$). Some children (148) made repeated (>1) visits to A&E in the last 12 months and 26.4% (63) made >3 visits. Stable children were more likely ($p < 0.001$) to use inhaled corticosteroids (ICS) compared with acute asthmatics. In contrast, acute asthmatics were more likely to use either salbutamol ($p = 0.001$) alone or no medication ($p = 0.006$). Acute exacerbations of asthma were associated ($p < 0.001$) with cough, fever and sore throat. Children requiring nebulization demonstrated a higher ($p = 0.018$) viral prevalence compared with stable children. Nebulized children were more likely ($p = 0.005$) to be infected with RV than stable children. RV was detected throughout the year and was not associated ($p = 0.867$) with a particular season. RV was the most prevalent virus in both seasons.

Trinidad's pediatric population over relies on salbutamol and underutilizes ICS. Viral respiratory infections are major contributors to exacerbations of childhood asthma in Trinidad. Rhinovirus, the major viral pathogen, is independent of seasonality.

Keywords: Jason Matthew; rhinovirus; respiratory viruses; childhood asthma; inhaled corticosteroids.