Incidence of respiratory diseases in hemodynamically significant congenital heart disease (hsCHD) children in Italy: the SINERGY study

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Introduction: Children affected by hsCHD are likely to experience severe respiratory complications that increase the number of hospitalizations. Objectives of the SINERGY study were to describe the incidence of respiratory diseases and to collect information on the active and passive immunoprophylaxis during the first two years of life.

Methods: This retrospective, multicenter, epidemiological study enrolled 420 hsCHD children in 11 Italian sites according to Italian Guidelines for hsCHD diagnosis. Subjects affected by HIV or malignancies were excluded from the study. Observation occurred in children born between 31/12/2007 and 31/12/2012. Data have been collected through hospital databases search and parents’ interviews.

Results: 420 children were enrolled in the study: 52% female; 80% full-term born, 78% weighed >2500g at birth, 14% presented with a genetic syndrome.

Ninety-four percent of the population showed 1 or 2 heart defects: the most frequent were interventricular septal defects (23% overall; 11% in combination with other cardiopathies), interatrial septal defect (14%; 11% in combination), and coarctation of the aorta (12%; 8% in combination). The major risk factors were hospital discharge during epidemic season (54%), presence of older siblings (44%) and no breast feeding (41%).

The overall incidence of any respiratory disease was 63.1%.

The most frequent respiratory diseases which didn’t require hospitalization were acute rhinopharyngitis, bronchitis and influenza (27%, 27%, 14%); while required hospitalization mainly bronchiitis and bronchiolitis cases (21%) primarily in December and January during the first year of life. The infection's etiology was identified only in 23 children (5.5%).

Active immunoprophylaxis was applied with wide compliance (Diphtheria/Pertussis/Tetanus: 99.5%; Haemophilus influenzae b: 72.5%; Pneumococcus: 80% Meningococcus: 77%), while only 54% of the study population received a respiratory syncytial virus (RSV) passive prophylaxis (palivizumab). In the bronchiolitis hospitalized population (33 children), 26 children (78%) were not prophylaxed against RSV or received only the first dose before the event, while 7 children (22%) were fully prophylaxed (p<0.001).

Conclusions: hsCHD children are at major risk for respiratory diseases: passive immunoprophylaxis can help to prevent hospitalizations for bronchiolitis. Active immunoprophylaxes showed different degrees of compliance, probably because DTP vaccine is mandatory in Italy, while other vaccines are at parents’ discretion.