

STUDY OF LRTI IN CHILDREN BELOW 5 YEARS

Paediatrics

Dr A Damodaran Alakkodan

Associate Professor, Department of Paediatrics, Kannur Medical College, Anjarakkandy, Kerala.

ABSTRACT

Acute respiratory infections are one of the causes of morbidity and mortality in our country especially in under-five children. The present study was undertaken to study the various risk factors, clinical presentations and outcome of lower respiratory tract infections in children below 5 years of age.

KEYWORDS

LRTI, Morbidity, Mortality, Children below 5 years.

INTRODUCTION:

Acute respiratory infections are one of the causes of morbidity and mortality in our country especially in under-five children. Around 100 million new episodes each year, of which India accounts for a bulk of 33 percent.¹ The mortality is estimated around 1.9 million per year, out of which India accounts for around one fourth roughly.² The WHO Programme for ARI Control guidelines define Pneumonia as cough in the presence of tachypnoea (respiratory rate >50 /min in children aged 2 months to 12 months and >40 /min in children aged 13 months to 60 months) and Severe and Very Severe Pneumonia as the presence of chest in-drawing and central cyanosis, lethargy, convulsions and refusal of feeds of respectively.³ Tachypnoea and lower chest indrawing, when applied by health workers and paediatricians as a diagnostic tool, had the sensitivity of 70% and 81% respectively.⁴ ARI is responsible for about 30-50 percent of visits to health facilities and for about 20-40 percent of admissions to hospitals.⁵ In addition, immunocompromised individuals of all ages are at increased risk.⁶ Likewise, Haemophilus influenza type b (Hib) bacteria is estimated to cause 3 million cases of severe pneumonia and meningitis, and approximately 386,000 deaths per year in children under 5 years of age.⁷ The present study was undertaken to study the various risk factors, clinical presentations and outcome of lower respiratory tract infections in children below 5 years of age.

Aims and Objectives:

To study the LRTI in children below 5 Years.

MATERIALS AND METHODS:

This study was done in the Department of pediatrics, Kannur Medical College.

This study was done from August 2017 to July 2018.

The study was done in 60 cases that were delivered and a reference had been sought from the Department of Pediatrics.

Inclusion Criteria:

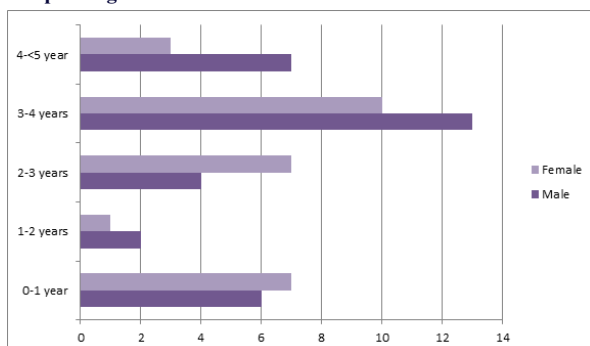
Clinically confirmed cases.

Exclusion Criteria:

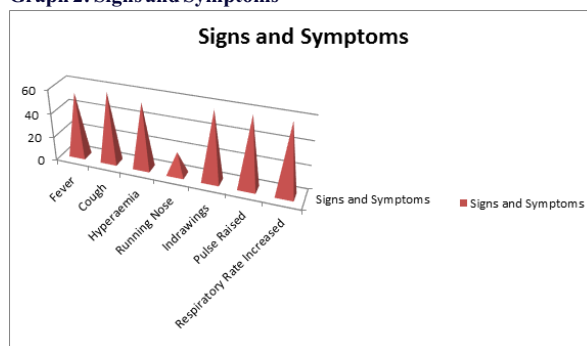
Steroid and other immune-suppressant therapy.

RESULTS:

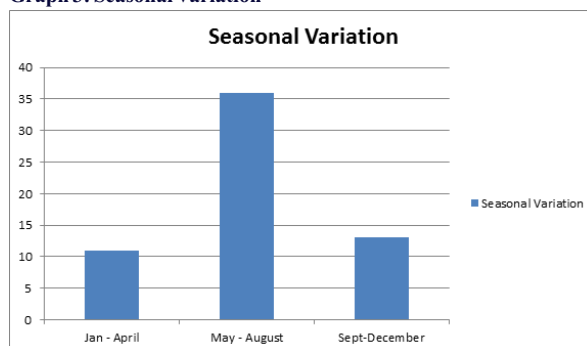
Graph 1: Age and Sex Distribution



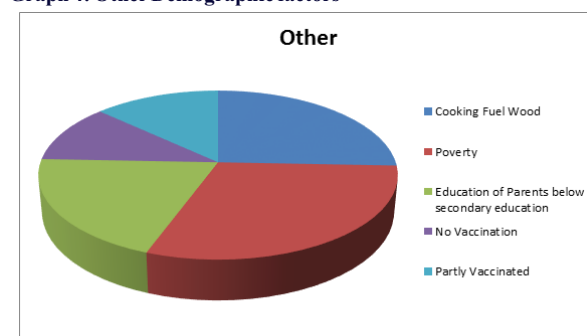
Graph 2: Signs and Symptoms



Graph 3: Seasonal Variation



Graph 4: Other Demographic factors



DISCUSSION:

Overall epidemiological data are poor because accurate diagnosis is limited by diagnostic methodology. The estimated incidence of LRTI is 30 per 1,000 children per year in the UK. UK data for children seen at hospital with pneumonia (clinical findings and CXR) in 2001-2002 found overall incidence rates of 14.4 per 10,000 in children aged 0-16 years per annum and 33.8 for those aged ≤ 5 years¹. Boys were more often affected than girls, as were children born between 24-28 weeks when compared to those born at term.

Haemophilus influenzae infection is now quite rare amongst UK

children because of immunisation.

There is no hard and fast definition of LRTI that is universally agreed upon. Essentially, it is inflammation of the airways/pulmonary tissue, due to viral or bacterial infection, below the level of the larynx. Remember that gastro-oesophageal reflux may cause a chemical pneumonitis. smoke and chemical inhalation may also cause pulmonary inflammation.

Viral infections^[2]

About 45% of children hospitalised with pneumonia have a viral aetiology^[3]. This includes:

- Influenza A.
- Respiratory syncytial virus (RSV)^[4].
- Human metapneumovirus (hMPV)^[2].
- Varicella-zoster virus (VZV) - chickenpox.

Bacterial infections

These constitute about 60% of hospitalised pneumonia cases^[3]:

- *Streptococcus pneumoniae* (the majority of bacterial pneumonias).
- *H. influenzae*.
- *Staphylococcus aureus*.
- *Klebsiella pneumoniae*.
- Enterobacteria - eg, *Escherichia coli*.
- Anaerobes.

Atypical organisms

- *Mycoplasma pneumoniae* (14% of all cases of hospitalised pneumonia in children^[3]).
- *Legionella pneumophila* *Chlamydia pneumoniae* (9% of hospitalised pneumonia in children^[3]).
- *Coxiella burnetii*.

Lower respiratory infections are among the commonest causes of morbidity and mortality among children under 5 years of age, especially in a country like ours. The vaccine is a must to fight against the commonly occurring infections. But in a country like ours where the partially immunized children are there is higher than of getting the infections.⁸ Over crowding and dense population also results in the increasing pattern of the same.⁹ Martineau AR et studies showed that slightly more cases are associated with overcrowding, that is, 91.35% and 80.87% respectively.¹⁰ Muhe Let al in Malaysia showed a significant association between ALRI and overcrowding. The spread of infection via respiratory droplets may be aggravated by overcrowding and also densely populated urban and semi-urban areas. Malnutrition also plays an important role in infections as suggested by many studies. A proposed pathophysiologic mechanism is that neutrophils have reduced the ability to kill *Staphylococcus aureus* due to reduced activity of myeloperoxidase, and the T-cells in circulation are reduced in number and they have defective DNA synthesis due to the attenuated activity of ribonucleotide reductase.¹¹

CONCLUSION:

REFERENCES:

1. Chantry CJ, Howard CR, Auinger P. Full breastfeeding duration and associated decrease in Dhivyanarayani M et al. *Int J Contemp Pediatr*. 2018 Jul;5(4):1322-1326
2. Cowgill KD, Ndiritu M, Nyiro J, Slack MP, Chipshatsi S, Ismail A et al. Effectiveness of *Haemophilus influenzae* type b conjugate vaccine introduction into routine childhood immunization in Kenya. *JAMA*. 2006;296:671-8.
3. Ganong WF. Gas transport between the lungs and the tissue. In: Ganong WF. *Review of medical physiology*. 22nd ed. New York: McGraw Hill. 2005:666-9.
4. Ganz T. Defensins: antimicrobial peptides of innate immunity. *Nat Rev Immunol*. 2003;3(9):710-20.
5. Guyton and Hall *Textbook of medical physiology*. 11th ed. Philadelphia: Saunders Elsevier. 2006:507-8.
6. Hawkes JS, Neumann MA, Gibson RA. The effect of breastfeeding on lymphocyte subpopulations in healthy term infants at 6 months of age. *Pediatr Res*. 1999;45:648-51.
7. Jain L, Vidyasagar D, Xanthou M, Ghai V, Shimada S, Blend M. In vivo distribution of human milk leukocytes after ingestion by newborn baboons. *Arch Dis Child*. 1989;64:930-3.
8. Janssen R, Bont L, Siezen CL, et al. Genetic susceptibility to respiratory syncytial virus bronchiolitis is predominantly associated with innate immune genes. *J Infect Dis*. 2007;196(6):826-34.
9. Letterio JJ, Geiser AG, Kulkarni AB, Roche NS, Sporn MB, Roberts AB. Maternal rescue of transforming growth-beta 1 null mice. *Science*. 1994;264:1936-8.
10. Martineau AR, Wilkinson RJ, Wilkinson KA, Newton SM, Kampmann B, Hall BM et al. A single dose of vitamin D enhances immunity to mycobacteria. *Am J Respir Crit Care Med*. 2007;176(2):208-13.
11. Muhe L, Lulseged S, Mason KE, Simoes EA. Case-control study of the role of nutritional rickets in the risk of developing pneumonia in Ethiopian children. *Lancet*. 1997;349(9068):1801-4