

ORIGINAL RESEARCH

Evaluation of Incidence of Community-Acquired Infections Among Young Children: An Institutional Based Study

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ABSTRACT

Background: The incidence of infections in children is high. However, some infections can have serious consequences. The present study was conducted to assess incidence of community acquired infections among young children. **Materials&Methods:** The present observational cohort study was conducted to assess incidence of community-acquired infections among young children. The signs of illness were noted. 3 mL of blood was collected from babies. Molecular testing was done to detect bacterial and viral pathogens. Data obtained was tabulated using Microsoft Excel (MS Excel 2010, Microsoft Corporation). Statistical analysis was performed using SPSS version 21.0 statistical software (SPSS, Chicago, IL). **Results:** A total of 1200 young children were included in the study, out of which 890 children (74.16%) suffered from community acquired infections. Out of total community acquired infections, 83.25% children were suffering from acute infections and 16.74% were suffering from serious infections. Out of 149 serious infections, 66.44% children had pneumonia, 3.35% had meningitis, 13.42% had infections of limbs and 16.77% had pyelonephritis. **Conclusion:** The study concluded that 74.16% children suffered from community acquired infections. Out of total community acquired infections maximum children were suffering from acute infections. Among serious infections, pneumonia was most common infection.

Keywords: Community Acquired Infections, Acute, Serious, Pneumonia.

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INTRODUCTION

The main causes of neonatal deaths in low-income and middle-income countries are prematurity, intrapartum-related events, severe infections, and congenital anomalies.¹⁻³ Severe infections, including sepsis, meningitis, and pneumonia, are estimated to cause about a third of the 2-6 million neonatal deaths globally or often lead to long-term disabilities.⁴ Community acquired pneumonia (CAP) is the leading cause of mortality of under-five children in developing countries, including India. Annually there are 151.8 million new cases of CAP.⁵ However, some infections can have serious consequences. For example, bacterial meningitis leads to mortality in 5% of the cases and morbidity, such as hearing loss, in 10%–15%.⁶ Up to 24% mortality after meningococcal disease, being sepsis or meningitis, has been reported.⁷ Serious infections are usually defined as serious bacterial infections: pneumonia, sepsis, meningitis, pyelonephritis, bacterial gastro-enteritis,

osteomyelitis and cellulitis.⁸⁻¹¹ Prevention of neonatal infections will be necessary to achieve Sustainable Development Goal 3 (ensure healthy lives and promote wellbeing for all at all ages) and the objectives of the Every Woman Every Child initiative.^{12,13} The present study was conducted to assess incidence of community acquired infections among young children.

MATERIALS& METHODS

The present observational cohort study was conducted to assess incidence of community-acquired infections among young children. Before the commencement of the study ethical approval was taken from the Ethical committee of the institute and the guardians of the participants. The signs of illness were noted. Children were assessed at every visit for signs of illness. Briefly, trained phlebotomists followed standardised protocols to collect up to 3 mL blood from babies with episodes for culture and testing. Physicians used

flocked swabs to collect nasopharyngeal and oropharyngeal samples from symptomatic babies. Automated blood culture was used to isolate bacterial pathogens. Molecular testing was done to detect bacterial and viral pathogens. Data obtained was tabulated using Microsoft Excel (MS Excel 2010, Microsoft Corporation). Statistical analysis was performed using SPSS statistical software (SPSS, Chicago, IL).

RESULTS

A total of 1200 young children were included in the study, out of which 890 children (74.16%) suffered from community acquired infections. Out of total community acquired infections, 83.25% children were suffering from acute infections and 16.74% were suffering from serious infections. Out of 149 serious infections, 66.44% children had pneumonia, 3.35% had meningitis, 13.42% had infections of limbs and 16.77% had pyelonephritis.

Table 1: Total incidence rates of all infections

Type of infections	N(%)
Acute infections	741(83.25%)
Serious infections	149(16.74%)
Total	890(100%)

Table 2: Incidence of serious infections

Incidence of serious infections	N(%)
Pneumonia	99(66.44%)
Meningitis	5(3.35%)
Infection of the limbs	20(13.42%)
Pyelonephritis	25(16.77%)
Total	149(100%)

DISCUSSION

The incidence of acute infections in children is high. For every 1000 children between 0 and 14 years, over 1100 acute infections are presented to the general practitioner every year. The vast majority of these infections are self-limiting upper respiratory tract infections. In contrast, serious infections are relatively rare: only 12.0 serious infections per year in every 1000 children between 0 and 14 years old. This is an annual incidence of little more than 1%, and accounts for 1.1% of the selected acute infections in this age group.¹⁴

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A recent study conducted in South Africa found that 87.4% of children under 5 years of age had at least one episode of bronchiolitis or pneumonia in an 18-month period. Of these children, 10.5% had two ARI episodes, and 1.7% had three episodes.¹⁵

Saha SK, et al investigated the incidence of community-acquired infections caused by specific organisms among neonates in south Asia. 6022 pSBI episodes were identified among 63 114 babies (95.4 per 1000 livebirths). Causes were attributed in 28% of episodes (16% bacterial and 12% viral). Mean incidence of bacterial infections was 13.2 (95% credible interval [CrI] 11.2–15.6) per 1000 livebirths and of viral infections was 10.1 (9.4–11.6) per 1000 livebirths. The leading pathogen was respiratory

syncytial virus (5.4, 95% CrI 4.8–6.3 episodes per 1000 livebirths), followed by Ureaplasma spp (2.4, 1.6–3.2 episodes per 1000 livebirths). Among babies who died, causes were attributed to 46% of pSBI episodes, among which 92% were bacterial. 85 (83%) of 102 blood culture isolates were susceptible to penicillin, ampicillin, gentamicin, or a combination of these drugs.¹⁶

Van den Bruel A estimated the incidence of serious infections in general practice in Belgium. The incidence of all infectious diseases peaks in children between 0 and 4 years, with 1731 infections per 1000 children per year in the yearly contact group. Incidence drops with increasing age: 972 infections per 1000 children per year in children between 5 and 9 years old, and 732 in children between 10 and 14 years old. The same decline in incidence is observed in the subgroup of serious infections: 21 infections per 1000 children per year in children between 0 and 4 years, 12 in children between 5 and 9 years and 5 in children between 10 and 14 years. The results for the estimated practice population are respectively 17, 9 and 4 serious infections per 1000 children per year.¹⁴

CONCLUSION

The study concluded that 74.16% children suffered from community acquired infections. Out of total community acquired infections maximum children were suffering from acute infections. Among serious infections, pneumonia was most common infection.

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