

PATTERN OF A.R.I. AMONG UNDER FIVES IN KANPUR

V.K. Srivastava*, J.P. Srivastava, ** R.C. Gupta ***, S.C. Gupta **, S.N. Sharma **, R.K. Gupta. ****, R.P. Sharma *

ABSTRACT:

Research Problem: What are the prevailing ARI trends and its correlates in hospital admitted patients?

Objectives:

- 1) To know the proportion of ARI cases among hospital admissions.
- 2) To find out the distribution pattern of ARI
- 3) To identify priority groups for action.

Study Design: Hospital case records - based, cross sectional study.

Setting: Tertiary level hospital, indoor admitted patients.

Participants: ARI cases in 0 - 5 years age group.

Sample Size: 343 children suffering from ARI, admitted in hospital during one year period.

Study Variables: Age, sex, localities of inhabitation, signs and symptoms, severity of illness.

Outcome Variables: Sites of infection, differential diagnosis, grades of severity, outcome of episode (cured, LAMA, death, DOPR).

Statistical Analysis: By chi - square test.

Result and Conclusion: Proportional under-five hospital admission rate of A.R.I. cases was 14.7%. More cases were from urban locality (44.9%), of 1-12 months of age (49.9%), and of severe grade (65.0%). Boys were more vulnerable (M/F ratio was 1.7:1), and hospitalised case fatality rate was 24.8%.

Key - words: ARI (Acute Respiratory tract Infection), Bronchiolitis, Pneumonia, Hospitalised, Locality, Grades of severity.

INTRODUCTION:

Acute respiratory tract infection (A.R.I.) is posing a great public health problem in our country, affecting underfive children population. It has a strong bearing on morbidity and mortality among children. Although the problem is very vast and widely preva-

lent in every part of the country, due emphasis has not been laid against this menace.

Acute upper respiratory tract infections include common cold, pharyngitis, otitis media, while acute lower respiratory tract infections include epiglottitis, laryngitis, bronchitis, bronchiolitis and pneumonia. Almost all ARI deaths in young children are due to acute lower respiratory tract infections, mostly pneumonia and bronchiolitis.

WHO reported that ARI is still prevalent in infants and young children in developing countries; and is the main cause of morbidity and mortality among children under five years of age. About 3.0% of deaths are attributed to lower respiratory tract infections alone.¹

Since ARI is not a notifiable disease in our country, correct information regarding the prevalence, morbidity and mortality profile is not available. The problem of ARI calls for studies to be carried out in different parts of the country, to have a better understanding of ARI trends and its correlates.

The present study was carried out as an effort to have a glimpse of the pattern of acute respiratory tract infections and an understanding of its various attributes. However, in the purview of the present paper, distribution pattern of ARI is being considered, to have an assessment of problem, magnitude and identification of priority groups.

MATERIAL AND METHOD:

In the industrial city of Kanpur, chances of under five morbidity of respiratory infections are more common due to added effects of environmental pollution. This fact initiated the study which has been carried out in the Paediatrics Department of G.S.V.M. Medical College and Sir Murari Lal Chest Hospital, Kanpur, during the period from 1st September, 1995 to 31st August, 1996. The cases of ARI were obtained from 2334 admitted cases. 343 children having ARI were taken as unit of study. ARI was taken to be an acute infection of less than 30 days duration of any part of the respiratory tract and related structures. ARI was classified on the basis of clinical

* Asstt. Professor, ** Assoc. Professor, *** Resident, **** Professor & Head, Dept. of Social and Preventive Medicine, G.S.V.M. Medical College, Kanpur, (U.P.) INDIA.

syndromes such as, ARI of upper or lower respiratory tract. ARI was also graded as mild/moderate/severe depending on the severity of signs and symptoms.

Mild grade: Respiratory symptoms, without difficulty in breathing and refusal of feed.

Moderate grade: Tachypnoea, minimal chest wall retraction, flaring of alae nasi.

Severe grade: Combination of above symptoms with difficult breathing, chest indrawing, refusal to feed, grunting, cyanosis, convulsions, etc.

OBSERVATIONS AND DISCUSSION:

Peak incidence of ARI (171 cases) was found in age group of 1 month to 12 months (49.9%) followed by 0-1 months age group - 64 (8.7%), 12-24 months age group - 41 (11.9%), 24 - 36 months - 32 (9.3%), 48 - 60 months - 21 (6.1%) and the least 14 (4.1%) cases were from age group 36 - 48 months. (Table - I). Relatively lesser incidence of ARI in age group 0 - 1 month in comparison with 1 - 12 months may be due to presence of stronger passive maternal immunity during neonatal phase of life. Our findings are in conformity with observations made by different workers.^{2,3,4,5}

Out of 343 cases of ARI studied, 217 (63.3%) were males and 126 (36.7%) were females, indicating male preponderance with male/female ratio of 1.7:1 (Table - II). Similar male preponderance for respiratory infections was observed in various studies^{6,7,8,9}. Admissions of more males than females may be due to the greater importance and priority being paid to male children by parents, and hence, they are brought to the hospital for treatment at an early stage and are more in number.

Maximum cases 154 (44.9%) were drawn from urban areas as compared to slums and rural areas. This may be due to the urban location of the hospital and also the fact that people in slum and rural areas are more inclined to seek medical remedy of ARI by local private medical practitioners, and they get their children admitted to a hospital only in critical stages of the illness.

Various signs and symptoms were presented by children and described by their parents during admission period. All cases showed fever - 343 (100.00%), followed by refusal to feed 340 (99.1%), cough 383 (82.5%) and running of nose in 246 (71.7%)

cases (Table - III).

Out of 343 ARI cases, maximum number 149 (43.4%) cases were of bronchiolitis followed by bronchopneumonia - 112 (32.7%), pneumonia - 69 (20.1%) and acute bronchitis 13 (3.8%) (Table - IV).

All grades of ARI were most prevalent in the age group of 1-12 months while moderate and severe grades were minimum in 0-1 months age group. Out of total 343 ARI cases admitted in hospital, maximum 223 (65.0%) were of severe grade followed by moderate grade 107 (31.2%) and least of mild grade 13 (3.8%) (Table - V). This may be due to the fact that hospitalization services are not usually utilized for mild infections.

Out of 343 hospital admitted cases of ARI, majority 229 (66.8%) cases were cured. Mortality was reported in 85 (24.8%) cases. Remaining cases left the hospital with or without medical advice. (Table - VI). Patwari, in a hospital based study reported 21.9% over all mortality due to ARI¹⁰. Kumar & Kumar also reported 15-20% mortality during infancy due to ARI¹¹, which is close to the observations of our study.

CONCLUSIONS:

On the basis of above observations, the following conclusions were drawn:

1. The underfives' ARI hospital admission rate was 14.7% (343 cases of ARI out of 2334 total hospital admissions).
2. Incidence of ARI was maximum in age group 1-12 months (49.9%).
3. Maximum hospitalized ARI cases were drawn from urban areas (44.9%) followed by slums (28.9%).
4. Male/female ratio of patients was observed to be 1.7:1.
5. All ARI cases presented with fever (100%), next common symptoms were refusal to feed (99.1%), cough (82.5%), and running of nose (71.7%).
6. Maximum cases were suffering from bronchiolitis (43.4%) followed by bronchopneumonia (32.7%) and pneumonia (20.1%).
7. Majority of hospitalized patients were of severe grade (65.0%) followed by moderate grade (31.2%).
8. Hospitalized ARI cases showed 24.8% mortality rate.

TABLE - I

DISTRIBUTION OF ARI CASES ACCORDING TO AGE GROUPS AND LOCALITY

| Age Group (mths.) | Urban | | Slum | | Rural | | Total | |
|-------------------|-------|------|------|------|-------|------|-------|------|
| | No. | % | No. | % | No. | % | No. | % |
| 0 - 1 | 21 | 13.6 | 23 | 23.2 | 20 | 22.2 | 64 | 18.7 |
| 1 - 12 | 88 | 57.1 | 41 | 41.4 | 42 | 46.7 | 171 | 49.9 |
| 12 - 24 | 18 | 11.7 | 14 | 14.1 | 09 | 10.0 | 41 | 11.9 |
| 24 - 36 | 13 | 5.8 | 10 | 10.1 | 09 | 10.0 | 32 | 09.3 |
| 36 - 48 | 06 | 3.9 | 05 | 5.1 | 03 | 3.3 | 14 | 4.1 |
| 48 - 60 | 08 | 5.2 | 06 | 6.1 | 07 | 7.8 | 21 | 6.1 |
| TOTAL | 154 | 44.9 | 99 | 28.9 | 90 | 26.2 | 343 | 100 |

(n=343)

TABLE - II

AREA WISE DISTRIBUTION OF ARI CASES ACCORDING TO SEX

| Sex | Urban | | Slum | | Rural | | Total | |
|--------|-------|------|------|------|-------|------|-------|------|
| | No. | % | No. | % | No. | % | No. | % |
| Male | 94 | 27.4 | 61 | 17.8 | 62 | 18.1 | 217 | 63.3 |
| Female | 60 | 17.5 | 38 | 11.1 | 28 | 8.1 | 126 | 36.7 |
| TOTAL | 154 | 44.9 | 99 | 28.9 | 90 | 26.2 | 343 | 100 |

(n=343), M : F ratio - 1.7 : 1

TABLE - III

DISTRIBUTION OF ARI CASES ACCORDING TO CLINICAL PRESENTATION

| Signs & symptoms | No. of ARI cases | % |
|------------------|------------------|-------|
| Cough | 383 | 82.5 |
| Expectoration | 9 | 2.6 |
| Fever | 343 | 100.0 |
| Wheezing | 135 | 39.4 |
| Refusal to feed | 340 | 99.1 |
| Cyanosis | 35 | 10.2 |

(n=343)

TABLE - IV

DISTRIBUTION OF ARI CASES ACCORDING TO DIFFERENTIAL DIAGNOSIS.

| Disease | No. of ARI cases | % |
|------------------|------------------|------|
| Acute bronchitis | 13 | 3.8 |
| Pneumonia | 69 | 20.1 |
| Bronchopneumonia | 112 | 32.7 |
| Bronchiolitis | 149 | 43.4 |
| TOTAL | 343 | 100 |

(n = 343)

TABLE - V

CORRELATION OF SEVERITY OF ARI WITH AGE

| Age group (mths.) | Mild | | Moderate | | Severe | | Total | |
|-------------------|------|------|----------|------|--------|------|-------|------|
| | No. | %. | No. | %. | No. | %. | No. | % |
| 0 - 1 | 5 | 38.4 | 10 | 9.3 | 49 | 22.0 | 66 | 18.7 |
| 1 - 12 | 6 | 46.2 | 59 | 55.2 | 106 | 47.5 | 171 | 49.9 |
| 12 - 60 | 2 | 15.4 | 38 | 35.5 | 68 | 30.5 | 108 | 31.5 |
| TOTAL | 13 | 3.8 | 107 | 31.2 | 223 | 65.0 | 343 | 100 |

($n=343$) ($X^2 = 12.09$, Significant) $p < 0.05$

TABLE - VI

DISTRIBUTION OF ARI CASES ACCORDING TO OUTCOME OF DISEASE

| Outcome of ARI patients | Total no. of cases | % |
|-------------------------|--------------------|------|
| Cured | 229 | 66.8 |
| Relieved (DOPR) | 14 | 4.1 |
| Death | 85 | 24.8 |
| Lama | 14 | 4.0 |
| Total | 14 | 4.0 |

($n=343$), DOPR = Discharge on patient's request.
LAMA = Left against medical advice.

REFERENCES:

1. WHO Technical Report Series, 1980, No. 642.
2. Vasudev, Y.L., Study of factors influencing acute respiratory tract infections, Thesis for MD submitted to faculty of AIIMS, New Delhi, 1963.
3. Gulati, V.V., Morbidity and mortality pattern in children under five, Thesis for MD submitted to Faculty of AIIMS, New Delhi, 1995.
4. Verma, I.C. & Menon, P.S.N., Epidemiology of acute respiratory disease in North India, Indian J. Paed., 1981, 48: 37-40.
5. Rehman, M. et al, Acute lower respiratory tract infection in Dhaka, Bangladesh, Rev. Infect. Dis. 1990, Nov. Dec. 12, Suppl. 8: 5899-5906.
6. Hug, et al, Acute lower respiratory tract infection due to virus among hospitalised children in Dhaka, Bangladesh, Rev. Infect. Dis. 1990, Nov - Dec. suppl. 8: 5982-5987.
7. Oyezide, et al, Acute respiratory tract infection in children in Indikan community, Ibadein, Nigeria and its severity, risk factors and frequency or occurrence, Rev. Infect. Dis. 1990, Nov - Dec. 12, suppl. 8: 51042-6.
8. Cruz, J.R., et al, Epidemiology of acute respiratory tract infections among Guatemalan ambulatory pre-school children, Rev. Infect. Dis. 1990 Nov - Dec. 12, suppl. 8: 51029-51034.
9. O' Kelly, E.A., & Hillary, I.B., Epidemiology of respiratory syncytial virus infection among infants over three winter seasons, Ind. J. Med. Sci. 1991, Jan. 160 (1): 12-16.
10. Patwari, A.K. et al, Acute respiratory tract infection in children, Indian Pediatr., 1988, 25: 613-617.
11. Kumar, V., & Kumar, L., Acute respiratory infection in children, Indian. Pediatr. 1983, 20: 159-161.