Clinical severity and cost of respiratory syncytial virus hospitalisations

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Introduction

Acute respiratory infection (ARI) due to respiratory syncytial virus (RSV) is a leading cause of emergency department (ED) visits and hospitalizations in infants and children (1). Infants and young children with primary infections usually present with lower respiratory tract infections (LRTI). In the United States about 1-2% of infants presenting with LRTI require hospitalization. The mean hospital charge per case of bronchiolitis among patients <2 years of age was \$8543 in 2009 in USA (1). Laboratory diagnosis of RSV should be investigated for hospitalized patients to help decions on treatment and cohorting..

In this study we aimed to determine clinical features and cost of hospitalisation among children with respiratory syncytial virus (RSV) infection .

References:

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Methods:

Children under 5 years of age with ARI whose respiratory samples were positive for RSV with fluorescent immunoassay rapid test (Sofia™) were retrospectively collected in a tertiary center. Age, sex, underlying illness, use of mechanical ventilation, lenght of admission, and cost of hospitalisation were noted

Results:

Between 1 Jan 2016-31 Jan 2018, 200 children were identified to have RSV infection. Among the,m 41 (20%) were hospitalised (Figure 1) and 8% of all children (n=16) had intensive care unit (ICU) admission. The mean age at presentation was 3.7 months (13 days-14 months). Male-to-female ratio was 1.05 (Table 1). 28 (68%) patients had no underlying illnesses (Table 2). 7 were preterm, 2 had Down syndrome, 3 had chronic lung disease, 2 had congenital heart disease. Only one death was reported in a child with immunodeficiency. Mean hospital stay was 7.8 days Antibiotics were given in 75.6% of patients. The median direct cost for hospitalization was US\$ 282 per case.

Table 1. Patients' characteristics	n (%)
Age (n =41)	
<3 months	24 (58.5)
3-6 months	11 (26.8)
7-12 months	5 (12.2)
>12 months	1 (2.4)
Sex	
Male	21 (51.2.)

Table 2. Comorbidities of patients

Underlying condition	n (%)
None	28 (68.3)
Preterm	7 (17.0)
Chronic lung disease	3 (7.3)
Congenital heart disease	2 (4.8)
Neuromuscular disease	2 (4.8)
Immunodeficiency	2 (4.8)
Laryngomalacia	1 (2.4)

Figure 1. Distribution of cases according to admission date

Table 4. Factors associated with admission to Intensive care

Variable	PICU admission		p
	Yes	No	
Age (months)*	2.9	4.2	0.14
M/F	0.7	1.2	0.44
% Comorbidity	53.8	46.2	0.18
% Fever	68	54	0.28
% Cough	100	96	0.41
% Tachypnea	100	64	0.07
Leukocytes*	12,960	13,264	0.86
CRP*	0.44	1.25	0.086
ALT*	35	60	0.52
% Infiltration on CXR	75	64	0.46
% Antibiotics	87	68	0.15

*mean

Discussion:

In this cohort, RSV hospitalization rate is greatest among infants <3 months. 8% of patients needed ICU treatment. A previous study from Bursa evaluating 254 children with RSV LRTI, ICU admission rate was 10.4% (2). Most RSV-infected children admitted to the ICU are not in any recognized high-risk categories in our study. Tachypnea is associated with PICU hospitalization (Table 4). In previous studies, RSV hospitalizations were reported to be more severe among preterm infants. Infants <90 days old required more intensive and longer treatment.

Conclusion:

RSV constitutes a considerable burden on childhood health. A timely diagnosis of RSV ARI should diminish unnecessary antibiotic use.