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Molecular detection of *Mycoplasma pneumoniae* among patients with severe respiratory and influenza-like illness in South Africa, 2012-2013

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Background: The burden of disease caused by *Mycoplasma pneumoniae* is unknown in South Africa due to the lack of reliable diagnostic tools and clinicians rarely requesting testing. We sought to describe the prevalence of *M. pneumoniae*.

Methods & Materials: Patients with severe respiratory illness (SRI), influenza-like illness (ILI) and asymptomatic individuals were enrolled from May 2012 to August 2013. Nasopharyngeal/oropharyngeal specimens were collected from all patients; induced sputum was collected from SRI patients only. Real-time PCR targeting the community-acquired respiratory distress syndrome toxin gene (MP181) was used to identify *M. pneumoniae*. Macrolide susceptibility testing, using high-resolution melt curve analysis (HRM) of the 23S rRNA gene and multiple-locus variable-number tandem-repeat analysis (MLVA) was performed on 70% (30/43) of *M. pneumoniae*-positive nasopharyngeal/oropharyngeal specimens. Of these, 80% (24/30) had sufficient volume for culturing. P1 typing was performed on culture-positive specimens using HRM.

Results: 3201 SRI patients, 2073 ILI patients and 714 asymptomatic individuals were enrolled, and testing was performed on 71% (2280/3201), 80% (1657/2073) and 74% (525/714) with a detection rate of 2% (46/2280), 1% (15/1657) and 0.2% (1/525), respectively. Among the 46 SRI cases with positive specimens, *M. pneumoniae* was detected in 24 nasopharyngeal/oropharyngeal specimens, 16 induced sputum specimens and 6 cases were positive in both specimen types. *M. pneumoniae* was detected in all age groups with 61% (28/46) of cases occurring in children <5 years. Of those tested using MLVA (73%, 22/30), 3 distinct types, 3/5/6/2 (36%, 8/22), 3/6/6/2 (36%, 8/22) and 4/5/7/2 (27%, 6/22) were identified. Macrolide susceptibility testing results were obtained for 77% (23/30) of *M. pneumoniae*-positive nasopharyngeal/oropharyngeal specimens, all of which were susceptible. A positive culture for *M. pneumoniae* was obtained for 13% (3/24) of nasopharyngeal/oropharyngeal specimens, of which two were P1 type 2 and one was P1 type 1.

Conclusion: Prevalence of *M. pneumoniae* was the highest amongst children <5 years with SRI. No macrolide resistance was detected. Both P1 type 1 and type 2 were present in culture-positive specimens.

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A study on prevalence and antibiotic sensitivity pattern of bacteria causing lower respiratory tract infections and their association with risk groups

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Background: The study aimed to look into prevalence of bacterial pathogens among patients with Lower Respiratory Tract Infection (LRTI) in Kolkata, their antibiotic sensitivity pattern and association with special risk groups.

Methods & Materials: The study was conducted in two Kolkata hospitals from January 2012 to September 2013.

Patients more than 12 years of age presenting with acute illness of less than 21 days having usually cough as the main symptom with or without expectoration were selected.

Laboratory investigations included complete blood count and routine biochemical tests. Sputum, Endotracheal Tube suction or Induced sputum (when patient could not expectorate) was collected. Quantitative sputum cultures were performed in each accepted specimen.

Bacterial Identification was done by standard methods. Antibiotic sensitivity of the organism isolated was done by Kirby Bauer Disc Diffusion Technique (According to CLSI Guideline)

Results: 214 patients could produce acceptable quality of sputum (187) or endotracheal suction material (27)-146 were male (68%) and 68 female (32%). Age of patients ranged from 12 to 87 years.

122 (57%) organisms were isolated - 99 (52.94%) from sputum and 23 (85%) from endotracheal aspirate materials. Gram positive organisms were isolated more in the younger age group. The patients with more comorbidities and older age showed greater isolation of Gram negative pathogens. *Klebsiella pneumoniae* was predominant. MDR were common. Majority of Gram negative bacteria were producers of several types of beta lactamase enzymes e.g. ESBL, KPC, MBL. Majority *Acinetobacter baumannii* group (MBL) and *Klebsiella pneumoniae* (KPC) were sensitive to Tigecycline, Polymixin B and Colistin only. Amongst the Gram positive group, all *Staphylococcus aureus* were MSSA except one MRSA.

Microbes were isolated in the older age group in significantly higher percentage ($p < 0.005$). 90.9% *Staphylococcus aureus* was isolated in the age below 64 years.

Among risk factors smoking scored highest (50.93%) followed by alcoholism, previous hospitalisation. Associated comorbidities included chronic lung diseases (28.03%-highest), diabetes & hypertension.

Conclusion: LRTI occurred equally among both the sexes and rural and urban population. Gram positive organisms were isolated more in the younger age group. Elderly population were more vulnerable to the MDR group of Gram negative pathogens. Major risk