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EDITORIAL COMMENTARY

Streptococcus pneumoniae Acquisition and Carriage

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It is well accepted that invasive pneumococcal disease is a major cause of morbidity and mortality among children < 2 y and adults > 65 y of age. This gets further worse in some comorbid conditions like HIV disease and hematological malignancies of all age groups [1]. In children, pneumococcal conjugate vaccine (PCV) has significantly controlled the impact of the invasive pneumococcal disease (IPD) [2]. India accounted for around 68,700 pneumococcal deaths in children in 2015 [3]. High nasopharyngeal colonization has been found in several studies in India [3]. The most common ten serotypes found in a study from South India were 1, 3, 5, 19F, 8, 14, 23F, 4, 19 and 6B and accounted for 54.9% of IPD cases. In this study, penicillin non-susceptibility was 6.4% higher than earlier report of 3% [1]. International guidelines recommend pneumococcal conjugated vaccine (PCV) in all high risk groups like HIV, as reviewed by Lopez et al. [4].

Nasopharyngeal carriage in toddlers and infants is a potential source for horizontal transmission in the community [5]. The serotypes (ST) circulating across the country do vary geographically; thirty five (77.7%) STs isolated from south were PPCV 7 and 13 vaccine types. In vaccinated and non-vaccinated children it is important to know the colonizing ST for predictability of vaccine (PCV) efficacy in a community. All isolates were vancomycin sensitive and susceptible to levofloxacin. However, penicillin resistance varied between 3–6%. In pneumococcal meningitis group, 27.4% and 9.9% isolates were non-susceptible to penicillin and cefotaxime, respectively [1, 6]. As per the study published here in this issue of IJP by Arya et al. [7], in children and parents with HIV, it was found that colonization in children and their parents with HIV was 31% and in those without HIV was 32%, indicating not much difference and the common vaccine types were 6A, 6B and 19A [7].

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In a study of 245 HIV/AIDS patients, nasopharyngeal swabs revealed 11% (95% CI; 7.4 to 15.6) carriage among children and 25% (95% CI:14% to 38.9%) carriage among adults [8]. Among 200 healthy children aged between 3 mo and 3 y attending Pediatric OPD at Sir Ganga Ram Hospital, the pneumococcal carriage rate was found to be 6.5%. Isolates belonged to serotypes 1, 6, 14 and 19, of which serotype 19 was the most common [9]. In a prospective 2-year pneumococcal surveillance study in patients with community-acquired pneumococcal infections of ≥50 years' age group, the most common serotypes observed in the study were 19A (14%), 8 (10%), 19F (8%), 3 (6%) and 9N (6%). The non-vaccine serotypes (NVTs) comprised 30% (n = 15) of the isolates [10]. IPD was significantly associated with pneumococcal carriage. As per this study the most prevalent pneumococcal serotypes were 19A and 23F. It was found that pneumococcal carriage among HIV infected children was 3-fold higher compared to the carriage among HIV infected adults and predominates with non-vaccine ST [8].

The burden of pneumococcal disease is further complicated by the increasing resistance in HIV infected individuals, may be due to the routine prophylactic use of co-trimoxazole [8]. PCV 10 introduction in Kenya decreased the carriage rate of pneumococci in children as well as adults with HIV [11]. However, in post PCV 10 vaccinated children, the colonization of multi-drug resistant (MDR) pneumococcus including penicillin intermediate susceptible pneumococcus non vaccine types emerged in children. Similar findings were reported both in U.S. children and adults post PCV 7 introduction [11].

India introduced PCV 13 in 6 states in 2017-19 (Himachal Pradesh, Rajasthan, Bihar, Uttar Pradesh, Madhya Pradesh and Haryana). Children with IPD and the ones with only carriage were studied (91 IPD and 510 community children). The proportion colonized with *S. pneumoniae* (SP) was 74.7% and 54.5% among children with IPD and community children, respectively. The PPCV-13 ST was similar in both groups and the most common STs were 6A, 6B, 14, 19A, 19F and 23F and all were represented in PCV-13. Drug resistance was more common in IPD types (25.8% *vs.* 16.4%) [3].

Compliance with Ethical Standards

Conflict of Interest None.

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