Reviewer’s report

Title: High Carriage Rate of High-level Penicillin-Resistant Streptococcus pneumoniae in a Taiwan Kindergarten Associated with a Case of Pneumococcal Meningitis

Version: 1 Date: 3 September 2005

Reviewer: Ana Lucia Andrade

Reviewer’s report:

General

The authors conducted a nasopharyngeal (NP) surveillance cultures among children attending the same kindergarten as an index case of multi-drug resistant pneumococcal meningitis, serotype 19F (penicillin MIC=4) to identify the source of the pneumococcal infection of the index case. They found a cluster of 19F isolates (83%; 10/12), undistinguishable from the Taiwan 19F clone, colonizing the nasopharynx of the kindergarten children, while the 19F pneumococcal isolates from the index case (NP, blood and CSF) was a variant of the Taiwan 19F clone.

What remained to be determined was the real source of the pneumococcal infection of the index case. Investigation at the family members of the index case would have indeed contributed on this issue. The relevance of this study is to disclose the clonal dissemination of penicillin-resistant pneumococcal carriage Taiwan 19F-14 throughout the kindergarten, besides the amazing proportion (87%) of NP pneumococcal highly resistant to penicillin (MIC>=2).

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

None

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Case report

Page 3, last paragraph, and page 4, 1st paragraph. Perhaps a few additional clinical data could be provided to the readers. Is there any suspicion on the focal point that could have provided an entry for pneumococci to reach the CSF (say, sinus/ear infection)? Is there any explanation for the high blood pressure for this patient at the hospital admission? In some cases, high levels of blood pressure may precede the septic shock, but there is no mention on its severe event. Was it just a consequence of intra-cranial hypertension (> 400 mmHg)? Also, the results of the CSF examination are compatible with partially treated meningitis, as the boy had received antibiotic previously to the hospitalization. These are clinical details that might be of interest.

Discussion

1st paragraph. The text should bring into the discussion other similar studies carried out mainly in day-care centers which found nasopharyngeal pneumococcal isolates highly resistant to penicillin. For example, the paper by Boken and colleagues (ref below) in which 53% of the pneumococcal carriage isolates had MIC>=2.0. Also, papers showing the genetic connection between the serotype

Page 8, 1st paragraph. Nasopharyngeal swabs collected of household contacts of the index case of meningitis would provide the unique opportunity to investigate the source of the pneumococcal meningitis at the family level (say, younger siblings, etc); even to study the extent of spread of these highly nasopharyngeal resistant pneumococcal strains to family members. In this direction there are a couple of papers I think you could mention to implement your discussion. I would mention the papers by Givon-Lavi N et al (Spread of Streptococcus pneumoniae and antibiotic-resistant S. pneumoniae from day-care center attendees to their younger siblings. J Infect Dis. 2002;186:1608-14), and by Rauch et al (Am J Dis Child 1990;144:923–7).

Page 8, 1st paragraph, lines 6-8. The authors stated, “We have no ready explanation why the S.pneumoniae serotype 19F isolated from the index case exhibited a different albeit possibly related PFGE pattern from those isolated from his kindergarten contacts”. As this is an intriguing finding of your study, could anything further be elaborated/ hypothesized such as genetic transformation at the time of invasion?

Outbreaks of pneumococcal meningitis (and also pneumonia) at day care attendance have been documented in the literature and the link between nasopharyngeal and CSF strains has been established. These issues should be incorporated in the discussion and the references should be mentioned accordingly. In this regard, in the current era of bioethics, I do have a point to address. Assuming a potential risk of a secondary case from the index case, it would be interesting to know what practical public health measures, came about as a result of this surveillance effort since: (i) 90.3% (28/31) of the pneumococcal serotypes identified in the nasopharynx of the children at the kindergarten are included into the 7-valent pneumococcal conjugate vaccine; (ii) 87.1% (27/31) of them were highly resistant to penicillin. Were the kindergarten contacts of the ill children offered any chemoprophylaxis (say, with rifampin, clindamycin) or even vaccination? Please, consider discussing the appropriateness of vaccinating these kindergarten attendees with the 7-valent pneumococcal conjugate vaccine to control the spread of multidrug resistant S. pneumoniae and/or the occurrence of secondary cases, or even outbreaks, as the most resistant serotypes are included in the vaccine formulation.

Typing correction

Pag 5, last line - “pneumoncoccal”
Pag 6, 2nd paragraph - “15.6.7%”
Discretionary Revisions (which the author can choose to ignore)

**What next?:** Accept after minor essential revisions

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** No

**Declaration of competing interests:**
I declare that I have no competing interests.