A New Strategy Is Needed to Prevent Pneumococcal Meningitis
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ABSTRACT

Objectives: Evaluate the ability of polysaccharide-conjugate vaccines (PCVs) to adequately protect against total pneumococcal meningitis.

Methods: References for this review were identified through searches of PubMed for articles published from January 1930 to the present by use of the terms "Streptococcus pneumoniae", "meningitis", "PCV", "serotype replacement", "capsule type", "capsule-dependent disease", and "nasopharynx to brain transmission". Relevant articles were also identified through searches in Google and Google Scholar. Articles resulting from these searches and relevant references cited in those articles were also reviewed. Only articles written in English were included.

Results: PCVs target the pneumococcal capsular types in the US and Europe that were the most common causes of total and meningococcal meningitis. As these types were eliminated by the vaccines, it became apparent that in immunized populations, most invasive diseases caused by pneumococci, including bacteraemia, sepsis, and complicated pneumonia, were greatly reduced. However, the protective effects of PCVs against another invasive disease, meningitis, showed much less or no decrease in disease incidence. Even in the presence of the PCVs, meningitis rates in children have been reported globally to as high as 13 per 100,000 annually. The PCV type strains, which had been largely eliminated from carriage, were replaced by a broad diversity of new capsular types that generally failed to cause frequent sepsis but were able to cause meningitis at levels similar to, or in excess of, prior pneumococcal meningitis rates. We suspect that this occurred because of a direct transmission of the non-PCV strains from the nasopharynx to the brain through non-haematogenous routes.

Conclusions: Since virtually all cases of pneumococcal meningitis lead to either permanent neurological sequelae or death, it would be well worth the effort to develop a new vaccine capable of preventing pneumococcal meningitis regardless of capsular type. Such a vaccine would need to protect against colonization with most, if not all, pneumococci.

REFERENCES

BACKGROUIND

RESULTS

CONCLUSIONS

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