Loss of Hearing Linked to Otitis in Meningitis

VITALS

Major Finding: Hearing loss frequently complicates pneumococcal meningitis and is associated with coexisting otitis on admission and infection with serotype 9V.

Data Source: Two prospective, nationwide observational cohort studies of adults with community-acquired bacterial meningitis in the Netherlands.

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BOSTON — Otitis on hospital admission and infection with pneumococcal serotype 9V were independently associated with hearing loss in patients who were treated for pneumococcal meningitis.

"Hearing loss is a major cause of morbidity in pneumococcal meningitis, affecting more than 20% of patients with the disease," study investigator Dr. Sebastiaan G.B. Heckenberg noted. Based on the findings, "patients with coexisting otitis on admission and infection with serotype 9V are at highest risk and should be monitored closely for this outcome," he said.

Using data from two prospective nationwide cohort studies in the Netherlands, Dr. Heckenberg of the Academic Medical Center in Amsterdam and colleagues identified 531 adults who survived pneumococcal meningitis from 1998-2002 and 2006-2009. All patients underwent neurologic examination at discharge and grading via the Glasgow Outcome Scale (GOS), with an unfavorable outcome defined as a GOS grade of 1-4. Additionally, the majority of patients had audiograms within 1 year after discharge.

Of the 531 patients, 112 experienced "any" hearing loss (defined as audiogram-assessed uni- or bilateral hearing loss of at least 20 decibels within 1 year post discharge, or hearing loss at discharge). A total of 47 experienced severe hearing loss (defined as World Health Organization hearing loss of at least grade 2, or hearing loss as a cause of unfavorable outcome at discharge).

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In patients with any hearing loss, otitis on admission was reported in 53%, which was significantly higher than the 32% observed in patients with no hearing loss, Dr. Heckenberg stated. In fact, "on admission, otitis was the only characteristic that was associated with any hearing loss," he said. "Severity of disease as reflected by low scores on the Glasgow Outcome Scale, systolic blood pressure, and [cerebrospinal fluid] white cell counts were not related to hearing loss in this group."

With respect to severe hearing loss, otitis on admission was not significantly associated, "but there was a trend among severe hearing loss patients to have lower CSF white cell counts," Dr. Heckenberg noted. Furthermore, an analysis of hearing loss incidence relative to pneumococcal serotype, which was available for 490 of the 531 patients, showed that serotype 9V was significantly associated with severe hearing loss, he said.

Of interest, Dr. Heckenberg noted, was that severe hearing loss was significantly less common among patients who received dexamethasone. Of the 530 patients for whom the information was available, 10 (4%) of the 240 patients who received dexamathasone experienced significant hearing loss, compared with 37 (13%) of the 290 patients who did not take the glucocorticoid.

This finding suggests that hearing loss associated with pneumococcal meningitis could be a function of inflammation, which is mediated by the steroid, he said. Further research into the preventive effect of glucocorticoid therapy is warranted, he noted. ■