

Progression of hearing loss in experimental pneumococcal meningitis: correlation with cerebrospinal fluid cytochemistry.

Abstract:

The development of hearing loss and concomitant cerebrospinal fluid (CSF) cytochemical changes in a model of pneumococcal meningitis were examined. Rabbits were injected intracisternally with 10^5 pneumococci. Auditory evoked potentials to clicks and to 10- and 1-kHz tone bursts were recorded hourly; CSF was analyzed every 4 h. Sensorineural hearing loss developed in all animals beginning 12 h after infection and progressed to severe deafness. The onset of hearing loss was preceded by a CSF leukocytosis of > 2000 cells/microL and elevation of CSF protein and lactate concentrations to $> \text{or} = 1$ mg/mL. Temporal bone histopathology showed pneumococci and leukocytes extending from the CSF to the perilymph via the cochlear aqueduct. Hearing loss can develop early in the course of meningitis and is preceded by the abrupt onset of inflammatory changes in CSF. Progression of hearing loss is rapid and proceeds from cochlear base to apex in parallel with the degree of inflammation.