Prevention of hearing loss in experimental pneumococcal meningitis by administration of dexamethasone and ketorolac.

Abstract:

Pneumococcal meningitis remains a significant cause of morbidity, particularly sensorineural hearing loss. Recent literature has suggested that a vigorous host immune response to Streptococcus [corrected] pneumoniae is responsible for much of the neurologic sequelae, including deafness, after bacterial meningitis. This study used a rabbit model of hearing loss in experimental pneumococcal meningitis to evaluate the therapeutic effect of two anti-inflammatory agents, dexamethasone and ketorolac, coadministered with ampicillin. Both adjunctive drugs minimized or prevented sensorineural hearing loss compared with placebo. Dexamethasone, administered 10 min before ampicillin, was particularly effective in minimizing mean hearing threshold change compared with placebo for both clicks (dexamethasone: 6.7-dB sound pressure level [SPL] vs. placebo: 33. 4-dB SPL, P=.0078) and 10-kHz tone bursts (dexamethasone: 8.4-dB SPL vs. placebo: 53.4-dB SPL, P=.0003). These findings support the beneficial role of anti-inflammatory agents in reducing the incidence of hearing loss from pneumococcal meningitis, especially if therapy is instituted early in the course of infection.