Middle Ear Tissue Mass and Audiometric Data from Otologic Care of Infants with Cleft Palate

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Routine early myringotomy in patients with cleft lip, cleft palate, or both revealed polypoid tissue masses as well as otitis media with effusion. Changes in middle ear mucosa usually associated with chronic middle ear dysfunction were observed in the early months (2 to 8) of life.

KEY WORDS: polypoid tissue mass, middle ear otitis media with effusion myringotomy

During 1985, 96 infants with congenital cleft palate were treated at Tampa Bay Craniofacial Center. Routine examination of middle ear cavities was performed during the course of myringotomy, which was performed during the first anesthesia for surgery for cleft lip, cleft palate, or both. Twenty-two of those infants were found to have middle ear changes demonstrated as tissue mass either unilaterally (12) or bilaterally (10) that filled the tympanic cavity (Stool and Randall, 1967; Paparella, 1980). This preliminary report presents otological and audiometric findings for the 10 patients who exhibited a tissue mass bilaterally. Eight of these patients had cleft palate only, two had cleft lip and palate.

NEONATAL AUDIOMETRIC AND OTOLOGIC FINDINGS

Routine initial and follow-up audiologic and otologic assessment were performed on each infant from birth. Audiometrics were implemented through regularly administered impedance testing (tympanometry and acoustic reflex). Although tympanometry has been reported to be unreliable in infants less than 6 months of age, in this clinical sample tympanometric evidence of pathology in 14 of the middle ears was confirmed by subsequent otological examination by either pneumatic otoscopy or otoscopy under the microscope. Additionally, otologic examination identified middle ear pathology in the remaining six ears.

OTOLOGICAL OBSERVATION

Long lasting pressure equalization tubes were inserted at the time of the first operation for cleft closure. When the tympanic membrane was incised, the borders of the myringotomy were spread to afford optically enhanced direct visualization of the middle ear space. The otologist noted abnormal tissue in the middle ear mucosa in each of the 20 ears. A mass of tissue partially or totally filled the middle ear space in each ear. In some ears, the spaces were filled with a combination of tissue and fluid. Biopsies of the tissue masses were performed and histopathologic examination was undertaken. Figure 1 shows a section taken from a portion of one biopsy. It presents organized cellular components similar to tissues subjected to longstanding inflammation (Paparella, 1980). The tissue mass is different from cholesteatoma, which has been associated with ongoing middle ear effusion and dysfunction (Goodhill and Guggenheim, 1971). Although similar conditions have been described in standard otolaryngological texts, the work of Stool and Randall (1967) appears to be the single previous reference to abnormal tissue in middle ears of patients with cleft palate.

POSTOPERATIVE AUDIOMETRIC OBSERVATIONS

Following initial palatal repair and insertion of pressure equalization tubes, hearing levels were assessed initially using sound field. When the subjects were 6 and 12 months of age, hear-
FIGURE 1 Fibrocollagenous granular tissue found in the middle ear of neonates. It seems to represent early changes in the mucosa due to lack of function of the middle ear ventilating system. A, Microscopic appearance of the tissue. B, Special stain to show the degree and distribution of cellular types present.

RESULTS

Post myringotomy air conduction hearing levels in all 10 subjects fell between 15 and 25 dB HL. Although that reflects traditionally normal limits for adults (Northern and Downs, 1983), in these subjects this classification must be reserved until any discrepancy between air and bone conduction thresholds can be identified. In 10 ears, an air-bone gap greater than 10 dB was found, and in two, the air-bone gap was measured at less than 10 dB. Three of the subjects gave unreliable responses to the test.

DISCUSSION

The effects of ventilation on this middle ear tissue mass is unknown at this time. Presence of the pathological tissue may contribute to post myringotomy conductive hearing loss found in 14 of 20 ears. The conductive hearing loss may affect perception of subtle acoustic characteristics of the sound environment (Northern and Downs, 1983; Trehub, 1981). Of particular concern is the impact of the tissue mass on discrimination of phonemes of language normally learned within the first 2 years of life.

These findings suggest the need for careful and cautious review of traditional otological treatment approaches to cleft lip and palate patients. Expectations of otitis media with effusion in young patients with cleft palate and procedures for its treatment may neglect identification and intervention for other middle ear problems. Unexpected middle ear pathology may contribute to poor health of the auditory mechanism and to communication disorders in patients with congenital cleft lip and palate.

REFERENCES


