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# Abstract Selection

**A preliminary comparison of videofluoroscopy of swallow and pulse oximetry in the identification of aspiration in dysphagic patients.** Sellars, C., Dunnet, C., Carter, R. Department of Speech and Language Therapy, Glasgow Royal Infirmary, UK. *Dysphagia* (1998) Spring, Vol. 13 (2), pp. 82–6.
Pulse oximetry has recently received attention in the dysphagia literature because of its possible contribution to the management of neurogenic dysphagia. The present study was devised to examine whether pulse oximetry could be exploited to determine episodes of aspiration in patients with known dysphagia of neurologic origin. To this end, pulse oximetry was undertaken in six patients undergoing videofluoroscopic study of swallow. Normal controls also underwent pulse oximetry during feeding. The results indicate that there is no clear-cut relationship between changes in arterial oxygenation and aspiration. However, some support is found for the association between altered arterial oxygenation and oral feeding in dysphagic individuals. Further research in both normals and compromised individuals is needed. Author.

**Supplemental iron exacerbates aminoglycoside ototoxicity in vivo.** Conlon, B. J., Smith, D. W. Division of Otolaryngology – Head and Neck Surgery, Duke University Medical Center, Durham, NC 27710, USA. *Hearing Research* (1998) January, Vol. 115 (1–2), pp. 1–5.
There is increasing evidence to suggest that free radical generation is central to a variety of pathological processes, including drug toxicity. Studies demonstrating the ability of gentamicin to facilitate the generation of radical species suggests that this process plays an important role in aminoglycoside-induced ototoxicity. Because transition metals, particularly iron, play an important role in the production of free radicals and the generation of reactive oxygen species, we sought to determine whether gentamicin-induced ototoxicity is exacerbated by increases in serum iron levels. To this end, we assessed the effects of supplemental iron administration (2 mg/kg/day and 6 mg/kg/day) on changes in auditory function induced by co-administration of gentamicin (100 mg/kg/day for 30 days). Experiments were carried out on pigmented guinea pigs initially weighing 250–300 g. Changes in cochlear function were characterized as shifts in compound action potential (CAP) thresholds, estimated every third day throughout the treatment period by use of chronic indwelling electrodes implanted at the round window, vertex, and contralateral mastoid. Results showed that animals receiving iron in combination with gentamicin demonstrated a more rapid and profound elevation in CAP thresholds compared with animals receiving gentamicin alone. This effect occurred in a dose-dependent manner. Animals receiving supplemental iron alone maintained normal CAP thresholds throughout the treatment period. There was no statistically significant difference in serum gentamicin levels between groups receiving gentamicin alone or gentamicin plus iron. These results provide further evidence of the recently reported intrinsic role of iron in aminoglycoside ototoxicity, and highlight a potential risk of aminoglycoside administration in patients with elevated serum iron. Author.

**Contralaterally evoked transient otoacoustic emissions.** Pratt, H., Shi, Y., Polyakov, A. Evoked Potentials Laboratory, Behavioural Biology, Technion-Israel Institute of Technology, Haifa. hillel@tx.technicon.ac.il. *Hearing Research* (1998) January, Vol. 115 (1–2), pp. 39–44.
Contralaterally evoked transient otoacoustic emissions (CETOAEs) were recorded from 10 normal-hearing young adults (20 ears) in response to monaural, 11/s, 65 dB pe SPL clicks to the ear contralateral to the microphone probe. A burst of CETOAEs was observed 12-22 ms (average peak at 18.5 ms) after the contralateral click, and its mean level was −7.3 dB pe SPL, 4 dB above the averaged noise level. The frequency content of CETOAEs included a prominence around 1 kHz. In 40 per cent of the ears examined CETOAEs were 3 dB or more above noise level in both replications of records from the same ear. To explain these results CETOAEs are suggested to reflect mechanical events induced by the crossed efferent system in the cochlea that was contralateral to the stimulated ear. The latency of the contralateral responses suggests that they may be related to the contralateral suppression effect observed with binaural stimulation. The latency of the response, coupled with the anatomical origin of the crossed efferent system at the superior olivary complex, suggest its involvement in the contralateral CETOAEs reported here. Author.

**Quantitative measures reflect degeneration, but not regeneration, in the deafness mouse organ of Corti.** Faddis, B. T., Hughes, R. M., Miller, J. D. Department of Research, Central Institute for the Deaf, St Louis, MO 63110, USA. faddis@cidmac.wustl.edu. *Hearing Research* (1998) January, Vol. 115 (1–2), pp. 6–12.
The deafness mouse (dn/dn) is a well known model of hereditary deafness uncomplicated by behavioural and motor disturbances. The organ of Corti in this mouse develops a normal complement of sensory and supporting cell structures, yet animals homozygous for this gene never demonstrate any hearing capacity. They are profoundly deaf from birth. Soon after development, the organ of Corti rapidly degenerates, most sensory cells having vanished by 50 days of age. Published observations have suggested that apical regions of the organ of Corti may regenerate some supporting cell structures by 90 days of age. We have quantified changes in organ of Corti structure from 15 to 130 days of age using several different measures. Measures of peak height and total cross-sectional area as well as a subjective rating scale, all demonstrate consistent degenerative changes during this time period. No evidence for regeneration of supporting or sensory cell structures is noted, although a surprising degree of variability is present in all regions of the organ of Corti which may account for previous claims. Author.

**Tympano-ossicular allografts for cholesteatoma in children.** Schilder, A. G., Govaerts, P. J., Somers, T., Offeciers, F. E. University Department of Otolaryngology – Head and Neck Surgery, Sint Augustinus Hospital, University of Antwerp, Antwerp-Wilrijk, Belgium. *International Journal for Pediatric Otorhinolaryngology* (1997) October 18, Vol. 42 (1), pp. 31–40.
At the Sint Augustinus Hospital, Antwerp, Belgium, all children with cholesteatoma are operated by a canal wall up approach and immediate reconstruction with a tympano-ossicular allograft. In the majority of the cases, a second stage is performed after one year. This paper presents the results of a retrospective review of the charts of 103 consecutive children treated between 1979 and 1995. The mean patient age was 10 years and the mean postoperative follow-up was 4.5 years. In 28 children residual cholesteatoma was found at the second stage operation and 20 developed recurrent cholesteatoma in the course of time. So far no residual cholesteatoma surfaced after the staged procedure, but 11 children needed more than two operations to control recurrent disease. An intact, trouble-free graft was present in 79 children at the latest follow-up. The median postoperative bone-conduction thresholds were equal to the preoperative thresholds. The median postoperative air-conduction thresholds improved in 50 per cent of the cases, remained unchanged in 25 per cent and deteriorated in 25 per cent of the cases. It is concluded that the tympano-ossicular allograft technique is effective and safe and offers good anatomical and acceptable functional results. Author.

**Management of pseudo-aneurysm of a lateral aberrant internal carotid artery.** Oates, J. W., McAuliffe, W., Coates, H. L. Department of Otolaryngology, Princess Margaret Hospital for Children, Subiaco, Australia. *International Journal for Pediatric Otorhinolaryngology* (1997) October 18, Vol. 42 (1), pp. 73–9.
A four-year-old boy scheduled for insertion of ventilation tubes

suffered significant aural hemorrhage following incision of the tympanic membrane. Examination under anaesthetic resulted in further hemorrhage. Investigation by carotid angiography revealed an anomalous internal carotid artery coursing through the middle ear with a small pseudoaneurysm. Subsequent management of this patient and review of the literature is presented. Author.

**Cochlear origin of hearing loss in MELAS syndrome.** Sue, C. M., Lipsett, L. J., Crimmins, D. S., Tsang, C. S., Boyages, S. C., Presgrave, C. M., Gibson, W. P., Byrne, E., Morris, J. G. Department of Neurology, University of Sydney and Westmead Hospital, Australia. *Annals of Neurology* (1998) March, Vol. 43 (3), pp. 350–9.
There have been few studies investigating the mechanism and nature of the hearing loss that occurs in the mitochondrial disorders. We studied 18 patients with the MELAS A3243G point mutation from four different kindreds. Pure tone audiometry, speech discrimination testing, acoustic reflexes, tympanometry, and brain stem auditory evoked responses were performed to localize the site of pathology in the auditory pathways. In 12 patients, we performed electrocochleography and otoacoustic emissions to assess cochlear involvement. Neuroimaging and promontory nerve stimulation were performed to exclude retrocochlear pathology. Audiological testing confirmed sensorineural hearing loss in 14 of the 18 patients studied; hearing loss was usually gradual in onset, was symmetrical, and initially affected the higher frequencies. In some patients, there were features that distinguished the hearing loss from presbyacusis, including a young age at onset, asymmetrical involvement, stepwise progression, and partial recovery. We treated one patient who had profound bilateral hearing loss with cochlear implantation; this restored good functional hearing. Hearing loss in MELAS syndrome appears to be due to dysfunction of the cochlea, probably resulting from metabolic failure of the stria vascularis and outer hair cells. Cochlear implantation is a therapeutic option worth considering in those patients who become deaf. Author.

**The costs of early hearing screening in England and Wales.** Stevens, J. C., Hall, D. M., Davis, A., Davies, C. M., Dixon, S. Department of Medical Physics and Clinical Engineering, Royal Hallamshire Hospital, Sheffield. *Archives of Disease in Childhood* (1998) January, Vol. 78 (1), pp. 14–9.
A survey was carried out in 10 centres in England and Wales to determine the costs of hearing screening in the first year of life. The screens that were studied were targeted neonatal, universal neonatal, and the health visitor distraction test (HVDT) or alternative surveillance. Valid data were available from five centres for targeted neonatal screening (TNS), three for universal neonatal screening (UNS), and nine for the HVDT, although only five of the HVDT screens had valid data for follow up costs. The neonatal costs were consistent across the centres surveyed, whereas those for the HVDT screen varied considerably. The mean service costs for TNS, UNS, and the HVDT at 1994 prices were 5052 Pounds, 13,881 Pounds and 24,519 Pounds for a standardized district of 1000 live births. Three conclusions seem justified. Firstly, UNS need not be prohibitively expensive as it costs considerably less than HVDT screening. Secondly, TNS appears to be a relatively inexpensive way of improving the age of identification of a proportion of the congenitally hearing impaired. Thirdly, given the published yields for UNS and the HVDT, the results indicate that UNS offers the most cost effective overall approach with alternative systems in place to identity late onset permanent hearing losses. Author.

**ECochG, CNAP and ABR monitoring during vestibular Schwannoma surgery.** Colletti, V., Fiorino, F. G., Mocella, S., Policante, Z. ENT Department, University of Verona, Italy. *Audiology* (1998) January-February, Vol. 37 (1), pp. 27–37.
Identification of the specific pathophysiological processes and correlation with post-operative hearing are the prerequisites for utilizing electrophysiological audio monitoring techniques in preventing damage to auditory structures during vestibular Schwannoma (VS) surgery. The present paper compares the value of auditory brainstem responses (ABRs), electrocochleography (ECochG) and directly recorded cochlear nerve action potentials (CNAPs) in detecting damage to auditory structures during VS surgery and predicting post-operative hearing. Eighteen consecutive patients operated on for VS, in an attempt at hearing preservation, participated in the investigation. The ipsilateral hearing level (pure tone average (PTA) 0.5–3 kHz) ranged from 10 to 50 dB HL (mean: 30.7 dB HL), with a speech discrimination score equal to or better than 50 per cent. CNAPs furnished the highest predictive score for post-operative hearing. In particular, when a permanent loss of CNAPs occurred the sensitivity and specificity were 100 per cent. The discrepancies between the ECochG and CNAP findings were attributable to high prevalence of cochlear nerve damage, capable of 'disconnecting' the ear from the central auditory pathways, causing persistence of peripheral auditory function and no propagation of the neural input. ABR monitoring was highly sensitive in detecting auditory damage but its prognostic utility was marred by its poor specificity. Author.

**Does choir singing cause noise-induced hearing loss?** Steurer, M., Simak, S., Denk, D. M., Kautzky, M. Department of Otorhinolaryngology – Head and Neck Surgery, General Hospital Vienna, University of Vienna Medical School, Austria. *Audiology* (1998) January-February, Vol. 37 (1), pp. 38–51.
Although health problems in musicians have been previously reported; not much is known about noise-induced hearing loss due to choir singing. However, there are data to show that peak levels of more than 110 dB SPL are produced in choir singing, and major parts of sound energy can be found below 1 kHz and even 500 Hz but not below 100 Hz. To find out about possible hearing loss due to professional choir singing, we measured the hearing threshold level of 62 choir singers in a large opera choir. Most publications about noise-induced hearing loss report that the high-frequency region is impaired most. However, in our study the low frequency region was affected most, when compared with normative data (especially ISO 7029). Control groups of women and men with normal auditory function did not show pure-tone hearing thresholds different from ISO 7029. The permanent threshold shifts at 250 Hz and above are most likely noise induced with choir singing as noise source. However, hearing losses at 125 Hz and possibly partial at 250 Hz are caused by some other effect. An (unproven) hypothesis is that singing might lead to increased endolymph pressure, and thus might cause hearing loss especially in the low-frequency region. Whether more choirs show similar hearing impairment and whether singing raises cerebrospinal fluid pressure will be the subject of further investigations. Author.

**Computed tomography for the detection of neck node metastases in melanoma patients.** van den Brekel, M. W., Pameijer, F. A., Koops, W., Hilgers, F. J., Kroon, B. B., Balm, A. J. Department of Otolaryngology/Head & Neck Surgery, The Netherlands Cancer Institute (Antoni van Leeuwenhoek Huis), Amsterdam, The Netherlands. *European Journal of Surgical Oncology* (1998) February, Vol. 24 (1), pp. 51–4.
AIMS: To assess the value of CT scanning for detection of lymph node metastases in the neck. METHODS: The appearance and site of the metastases was studied, as well as the sensitivity and specificity of CT. RESULTS: Nodal metastases did not always show a high contrast uptake and nodal density therefore cannot be used as a criterion for metastasis. Irregular contrast enhancement was seen in seven of the 21 tumour-positive necks. Frequently, metastases in the parotids, superficial nodes in the neck and in the posterior triangle were seen. The sensitivity and specificity of palpation and CT scanning were 87 and 100 per cent, respectively. CONCLUSIONS: However, because small, clinically occult, melanoma metastases were frequently overlooked on CT, the role of this imaging modality in assessing occult metastases remains limited. Based on recent data from literature it is reasonable to speculate that ultrasound guided fine needle aspiration cytology (FNAC) will prove to be more effective than a non-invasive staging procedure of the neck in melanoma patients. Author.

**Low-frequency masking for detection of endolymphatic hydrops in patients with glaucoma.** Kabudwand, E. A., Nubel, K., Gerdemann, M., Scholz, G., Mrowinski, D. ENT Department, Buch Hospital, Berlin, Germany. *Hearing Research* (1998) February, Vol. 116 (1–2), pp. 131–6.
The coincidence of various eye and ear abnormalities has been described in the literature. Some authors discuss the possible existence of endolymphatic hydrops in patients with glaucoma. Whereas the current diagnostic tests for glaucoma are well-defined

and evident, those for endolymphatic hydrops are not so reliable. This has made it difficult to accurately study the coincidence of endolymphatic hydrops and glaucoma. For better detection of endolymphatic hydrops, we performed low-frequency masking tests in 23 patients with primary open-angle glaucoma without signs of Meniere's disease. The phase dependent sensitivity of the organ of Corti to a short test stimulus can be measured by applying a low-frequency masker tone to determine the modulation depth. Whereas the modulation depth in the normal hearing population is around 20–35 dB, the modulation depth in patients with Meniere's disease may be significantly decreased (5–10 dB), depending on the stage of disease. A decreased modulation depth was found in at least one ear in 19 of our 23 patients with glaucoma. Correlations between homeostatic mechanisms and their histological characteristics, e.g. melanocytes and their hormonal and enzymatic regulation, will be discussed. If the common pathogenesis of eye and ear lesions is better understood, it may be possible to develop new and more effective strategies for prevention and therapy. Author.

**The value of ultrasound with ultrasound-guided fine-needle aspiration biopsy compared to computed tomography in the detection of regional metastases in the clinically negative neck.** Takes, R. P., Righi, P., Meeuwis, C. A., Manni, J. J., Knegt, P., Marres, H. A., Spoelstra, H. A., de Boer, M. F., van der Mey, A. G., Bruaset, I., Ball, V., Weisberger, E., Radpour, S., Kruyt, R. H., Joosten, F. B., Lameris, J. S., van-Oostayen, J. A., Kopecky, K., Caldemeyer, K., Henzen-Logmans, S. C., Wiersma-van-Tilburg, J. M., Bosman, F. T., Van Krieken, J. H., Hermans, J., Baatenburg, de Jong, R. J. Department of Otolaryngology and Head and Neck Surgery, University Hospital Leiden, The Netherlands. *International Journal of Radiation, Oncology, Biology, and Physiology* (1998) March 15, Vol. 40 (5), pp. 1027–32.
PURPOSE: Head and neck oncologists have not reached consensus regarding the role of contemporary imaging techniques in the evaluation of the clinically negative neck in patients with head and neck squamous cell carcinoma (HNSCC). The purpose of the present study was to compare the accuracy of ultrasound with guided fine-needle aspiration biopsy (UGFNAB) and computed tomography (CT) in detecting lymph node metastasis in the clinically negative neck. METHODS AND MATERIALS: Sixty-four neck sides of patients with HNSCC were examined preoperatively by ultrasound/UGFNAB and CT at one of five participating tertiary care medical centres. The findings were correlated with the results of histopathologic examination of the neck specimen. RESULTS: Ultrasound with guided fine-needle aspiration biopsy was characterized by a sensitivity of 48 per cent, specificity of 100 per cent, and overall accuracy of 79 per cent. Three cases had nondiagnostic aspirations using UGFNAB and were excluded. CT demonstrated a sensitivity of 54 per cent, specificity of 92 per cent and overall accuracy of 77 per cent. UGFNAB detected two additional metastases not visualized on CT, whereas CT detected no metastases not seen on UGFNAB. The results of UGFNAB were similar between the participating centres. CONCLUSIONS: Approximately one half of the clinically occult nodal metastases in our patient group were identified by both CT and UGFNAB. Overall, UGFNAB and CT demonstrated comparable accuracy. The sensitivity of CT was slightly better than UGFNAB, but the latter remained characterized by a superior specificity. The results of CT and UGFNAB did not appear to be supplementary. The choice of imaging modality for staging of the clinically negative neck depends on tumour site, T-stage, and experience and preference of the head and neck oncologist. If CT is required for staging of the primary tumour, additional staging of the neck by UGFNAB does not provide significant additional value. Author.

**Using joint geometry to determine the motion of the cricoarytenoid joint.** Selbie, W. S., Zhang, L., Levine, W. S., Ludlow, C. L. Voice and Speech Section, National Institute on Deafness and Other Communication Disorders, Bethesda, Maryland 20892-1416, USA. *Journal of Acoustic Society of America* (1998) February, Vol. 103 (2), pp. 1115–27.
Facet surfaces of the cricoarytenoid joints from two cadaver larynges were digitized. The data were used to compute the optimal axis of rotation for each of the joints in the sense that the computed axis minimized the variance of the joint gap over the full range of joint motion. The optimal axis corresponded to a rocking motion of the arytenoid on the corresponding cricoid. This motion was consistent with experimental data from digitized recordings of vocal fold movement. Using the rigid laryngoscopic view, a similarity in vocal process movement, over the range in motion, between the rocking axis and the vertical axis described in the literature was found, resolving the controversy between two conflicting views of motion of the vocal processes. Author.

**Extensive facial vascular malformations and haemangiomas: a review of the literature and case reports.** Watzinger, F., Gossweiner, S., Wagner, A., Richling, B., Millesi-Schobel, G., Hollmann, K. University Clinic for Maxillofacial Surgery, Vienna General Hospital, Austria. *Journal of Craniomaxillofacial Surgery* (1997) December, Vol. 25 (6), pp. 335–43.
We present six selected cases of extensive facial vascular anomalies extending to the skull base or actually involving it. These patients are compared with other cases in the literature. The spontaneous course of these vascular lesions is different and so variable treatment modalities are suggested depending on the age of the patient and the type of lesion. In young children, haemangiomas are common and spontaneous involution is characteristic. Conservative treatment in the sense of a wait-and-see approach is thereby favoured if there is no urgent indication such as involvement of essential structures, e.g. blockage of an orifice as demonstrated in one case or complications such as excessive bleeding. Vascular malformations most commonly appear in adults, there is no tendency to spontaneous involution and resection is usually necessary, especially in arteriovenous malformations. Nowadays, preoperative superselective embolization is recommended to minimize intraoperative blood loss. Superselective embolization is the treatment of choice in cases of a a-v fistulae. Proximal ligation of the supplying arteries should be avoided because this may make embolization more difficult, and may be responsible for the common occurrence of rapid revascularization. Author.

**A Moroccan family with autosomal recessive sensorineural hearing loss caused by a mutation in the gap junction protein gene connexin 26 (GJB2).** Lench, N. J., Markham, A. F., Mueller, R. F., Kelsell, D. P., Smith, R. J., Willems, P. J., Schatteman, I., Capon, H., Van-de Heyning, P. J., Van-Camp, G. Molecular Medicine Unit, St James's University Hospital, UK. *Journal of Medical Genetics* (1998) February, Vol. 35 (2), pp. 151–2.
We report a mutation in the connexin 26 gene (Cx26) in a consanguineous Moroccan family linked to the DFNA3/DFNB1 locus on human chromosome 13q11–q12. Affected subjects display congenital, bilateral, sensorineural hearing loss. We have previously identified Cx26 mutations in consanguineous Pakistani families. This current finding indicates that Cx26 mutations are not restricted to ethnically and geographically distinct populations. This is an important observation since it will help to determine the overall contribution of connexin 26 mutations to autosomal deafness in different populations. Author.

**Detection of radiation-induced, accelerated atherosclerosis in patients with osteoradionecrosis by panoramic radiography.** Friedlander, A. H., Eichstaedt, R. M., Friedlander, I. K., Lambert, P. M. Dental Service, Veterans Affairs Medical Centre, Sepulveda, CA 91343, USA. *Journal of Oral Maxillofacial Surgery* (1998) April, Vol. 56 (4), pp. 455–9.
PURPOSE: Osteoradionecrosis (ORN) of the mandible has long been considered the most destructive complication of head and neck irradiation. Recently, therapeutic irradiation has been implicated as the cause of induced/accelerated atherosclerosis of the cervical artery and subsequent stroke. Panoramic radiography, previously shown to be capable of identifying carotid artery atherosclerosis in nonirradiated individuals, was used to assess the carotid vasculature of patients being treated for ORN. PATIENTS AND METHODS: The panoramic radiographs of 61 men (mean age, 60.5 years; range, 41 to 77 years) who received therapeutic irradiation to the neck 36 months or more previously were assessed for the presence of carotid artery atherosclerotic lesions. Sixty-one control subjects who never received therapeutic irradiation, but who were similarly susceptible to atherosclerosis by virtue of age, were assessed in a like manner. RESULTS: The irradiated individuals sustained a dose of 40 to 72 Gy to the area of the carotid bifurcation. Seventeen individuals (27.9 per cent) with an irradiation dosage to the carotid bifurcation that averaged

59.2 Gy had a panoramic radiograph with a carotid atheroma (11 with unilateral lesions and six with bilateral lesions). The radiographs of the control subjects showed that three individuals (4.9 per cent) had calcified carotid lesions. The mean age of these subjects was 66.1 years; two had unilateral lesions, and one had bilateral lesions. The difference in the proportion of individuals with ORN who manifested carotid artery atherosclerosis on their panoramic radiographs was statistically significant ($p = 0.001$) when compared with the nonirradiated control subjects. The lesions seen in both populations had a similar morphologic appearance and were radiographically located within the soft tissues of the neck 1.5 to 4.0 cm inferior-posterior to the angle of the mandible. CONCLUSIONS: Individuals with radiation doses sufficient to cause osteoradionecrosis of the mandible are at significantly higher risk of developing carotid artery atherosclerotic lesions than age-matched, nonirradiated controls. Author.

**Prevalence of hearing loss among children six to 19 years of age: the Third National Health and Nutrition Examination Survey.** Niskar, A. S., Kieszak, S. M., Holmes, A., Esteban, E., Rubin, C., Brody, D. J. Epidemic Intelligence Service, Epidemiology Program Office, Centers for Disease Control and Prevention, Atlanta, GA 30341-3724, USA. abn0@cdc.gov. *Journal of the American Medical Association* (1998) April 8, Vol. 279 (14), pp. 1071–5.

CONTEXT: Hearing loss in children influences the development of communication and behavioural skills, but few studies in the United States have used pure-tone audiometry to derive hearing loss prevalence estimates for children. OBJECTIVE: To describe the prevalence of hearing loss among US children by sociodemographic characteristics, reported hearing loss, and audiometric screening factors. DESIGN: National population-based cross-sectional survey with an in-person interview and audiometric testing at 0.5 to 8 kHz. SETTING/PARTICIPANTS: A total of 6166 children aged six to 19 years completed audiometry in the mobile examination centre of the Third National Health and Nutrition Examination Survey conducted between 1988 and 1994. MAIN OUTCOME MEASURE: Hearing loss, defined as audiometric threshold values of at least 16 dB hearing level based on a low or high pure-tone average. RESULTS: A total of 14.9 per cent of children had low-frequency or high-frequency hearing loss of at least 16 dB hearing level, 7.1 per cent had low-frequency hearing loss of at least 16 dB hearing level, and 12.7 per cent had high-frequency hearing loss of at least 16 dB hearing level. Most hearing loss was unilateral and slight in severity (16- to 25-dB hearing level). Of those with measured hearing loss, 10.8 per cent were reported to have current hearing loss during the interview. CONCLUSIONS: This analysis indicates that 14.9 per cent of US children have low-frequency or high-frequency hearing loss of at least 16-dB hearing level in one or both ears. Among children in elementary, middle, and high school, audiometric screening should include low-frequency and high-frequency testing to detect hearing loss. Author.