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Annotated Bibliography

Nolan Altman, James A. Brunberg, Allen D. Elster, Ajax E. George, David B. Hackney, Robert B. Lufkin, Jeffrey S. Ross, Joel D. Swartz, Jane L. Weissman, and Samuel M. Wolpert

Vascular Lesions and Malformations

Nakagawa T, Hashi K. **The incidence and treatment of asymptomatic, unruptured cerebral aneurysms.** *J Neurosurg* 1994;80:217–223

The experiment described in this paper would probably never be allowed in the United States—performing cerebral arteriography in 400 healthy volunteers to look for aneurysms! These Japanese investigators did it, however, and here is the result—incidental, unruptured aneurysms were found in 26 patients (6.5%). The average size was 6.5 mm, with some as large as 15 to 20 mm. Clinical and historical correlation is provided.□ADE

Grosset DG, Straiton J, McDonald I, Bullock R. **Angiographic and Doppler diagnosis of cerebral artery vasospasm following subarachnoid hemorrhage.** *Br J Neurosurg* 1993;7:291–298

Angiography to determine vessel diameter of the anterior cerebral and middle cerebral arteries and transcranial ultrasound flow velocity measurements were performed on 102 patients with recent aneurysmal subarachnoid hemorrhage showed statistically significant inverse correlation between the middle cerebral artery diameter and flow velocity. This indicated that transcranial Doppler is a useful noninvasive monitor for the determination of development of delayed vasospasm after subarachnoid hemorrhage and may guide prophylactic treatment in these patients. Doppler changes were not seen before angiographic changes. The Doppler exam is best done 4 to 5 days after subarachnoid hemorrhage.□NA

Stroke

Eliasziw M, Streifler JY, Fox AJ, Hachinski VC, Ferguson GG, Barnett HJM. **Significance of plaque ulceration in symptomatic patients with high-grade carotid stenosis.** *Stroke* 1994;25:304–308

Angiographically defined plaque ulceration and risk of subsequent stroke was analyzed from the North American Symptomatic Carotid Endarterectomy Trial. Angiographically defined ulceration in medically treated symptomatic patients is associated with increased risk of stroke, which more then doubles at higher degrees of stenosis.□JSR

Manolio TA, Kronmal RA, Burke GL, et al. **Magnetic resonance abnormalities and cardiovascular disease in older adults.** *Stroke* 1994;25:318–327

Magnetic resonance (MR) findings such as ventricular enlargement, sulcal widening, and increased white matter changes were examined in 303 men and women. Cerebral atrophy and white matter disease were common in the elderly and were related to increased age, cerebral vascular disease, and hypertension. The authors do not feel the MR findings are normal concomitants of aging. Three MR figures.□JSR

Hornig CR, Rust DS, Busse O, Jauss M, Laun A. **Space-occupying cerebellar infarction.** *Stroke* 1994;25:372–374

Clinical data and imaging findings in 52 patients with cerebellar infarction, defined as space-occupying. Some patients were treated medically and some by suboccipital craniectomy. Comatose patients had a 38% chance of good recovery with decompressive surgery. Compressive surgery is suggested as the treatment of choice for massive cerebellar infarction with progressive brain stem signs.□JSR

Sitzer M, Furst G, Siebler M, Steinmetz H. **Usefulness of an intravenous contrast medium in the characterization of high-grade internal carotid stenosis with color Doppler-assisted duplex imaging.** *Stroke* 1994;25:385–389

Thirty-two patients were examined with color Doppler ultrasound before and after injection of the experimental contrast medium based on a saccharide microparticle suspension. Contrast material induced increased blood echogenicity 11 seconds after the start of bolus injection and had a half-life of 75 seconds. Visualization of the entire length of intrastenotic residual lumen was significantly improved by contrast. Four figures, with two color plates.□JSR

Levine RL, Turski PA, Holmes KA, Grist TM. **Comparison of magnetic resonance volume flow rates, angiography, and carotid Dopplers: preliminary results.** *Stroke* 1994;25:413–417

Comparison of conventional angiography, carotid Doppler, and cardiac-triggered cine two-dimensional phase-contrast MR angiographic acquisition to evaluate flow rates to the anterior circulation in carotid-occlusive disease in 11 symptomatic patients. They found that Doppler systolic velocities and measured stenosis were significantly higher and the phase-contrast flow volume rates were significantly lower for the symptomatic-side extracranial internal carotid artery than for the asymptomatic side. Two MR figures.□JSR

From Miami Children's Hospital (N.A.); University Hospital, Ann Arbor, Mich (J.A.B.); Bowman Gray School of Medicine, Winston-Salem, NC (A.D.E.); NYU Medical Center, New York (A.E.G.); Hospital of the University of Pennsylvania, Philadelphia (D.B.H.); UCLA School of Medicine, Los Angeles (R.B.L.); The Cleveland Clinic Foundation (J.S.R.); The Germantown Hospital and Medical Center, Philadelphia (J.D.S.); University of Pittsburgh School of Medicine (J.L.W.); and New England Medical Center Hospital, Boston (S.M.W.).

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Back T, Hoehn-Berlage M, Kohno K, Hossmann K-A. **Diffusion nuclear magnetic resonance imaging in experimental stroke: correlation with cerebral metabolites.** *Stroke* 1994;25:494–500

Authors carefully evaluated diffusion-weighted MR in seven rats and compared it with histology and quantitative bioluminescence imaging of adenosine triphosphate, glucose, lactate, and tissue pH after permanent occlusion of the middle cerebral artery. They found a precise topical coincidence between changes of diffusion imaging, the pattern of histologic damage, adenosine triphosphate–depleted areas, and local tissue acidosis. Two figures.□JSR

Levy DE, Brott TG, Haley EC, et al. **Factors related to intracranial hematoma formation in patients receiving tissue-type plasminogen activator for acute ischemic stroke.** *Stroke* 1994;25:291–297

Ninety-four patients received intravenous tissue-type plasminogen activator within 3 hours of the onset of acute ischemic stroke. In five of these patients symptomatic intracerebral hematomas developed. Significant associations between clinical factors and the hematomas were the tissue-type plasminogen activator dose and diastolic hypertension. Hematomas developed in four of 22 patients given a dose of at least 0.90 mg/kg.□JSR

Ueda T, Hatakeyama T, Kumon Y, Sakaki S, Uraoka T. **Evaluation of risk of hemorrhagic transformation in local intra-arterial thrombolysis in acute ischemic stroke by initial SPECT.** *Stroke* 1994;25:298–303

Intraarterial thrombolytic therapy was performed using urokinase or recombinant tissue plasminogen activator within 6 hours of onset in 34 patients. Technitium-99m hexamethyl propyleneamine oxime single-photon emission computed tomography was performed in 20 patients. Residual cerebral blood flow was lower in 5 patients who developed hemorrhagic transformation than in the 15 patients who did not. Pretherapeutic reduced cerebral blood flow increased the risk of hemorrhagic transformation after recanalization.□JSR

Temporal Bone

Welling DB, Glasscock ME III, Tarasidis N. **Management of carotid artery hemorrhage in middle ear surgery.** *Otolaryngol Head Neck Surg* 1993;109:996–999

This is a detailed description of the course and anatomy of the internal carotid artery in the temporal bone, with emphasis on structures of interest to the otologic surgeon (eustachian tube, middle ear). Two plain films (one upside down), one arteriogram, and a diagram.□JLW

Briggs RJS, Shelton C, Kwartler JA, Hitselberger W. **Management of hydrocephalus resulting from acoustic neuromas.** *Otolaryngol Head Neck Surg* 1993;109:1020–1024

The authors maintain that preoperative or perioperative ventricular shunting for patients with hydrocephalus secondary to acoustic neuromas is unnecessary, because the hydrocephalus improves (or remains asymptomatic) once the tumor is removed. Two computed tomography (CT) images, three MR images, including a proton-density image with periventricular signal hyperintensity labeled "enhancement."□JLW

Shaan M, Vassalli L, Landolfi M, Taibah A, Russo A, Sanna M. **Atypical presentation of acoustic neuroma.** *Otolaryngol Head Neck Surg* 1993;109:865–870

The design and discussion section of this odd study are unsatisfying. However, the take-home message is important: the clinical diagnosis of acoustic neuroma may be delayed or missed in young patients or when patients present with hearing loss of "apparently obvious etiology" (eg, noise exposure) or long duration. One coronal CT image.□JLW

Amble FR, Harner SG, Weiland LH, McDonald TJ, Facer GW. **Middle ear adenoma and adenocarcinoma.** *Otolaryngol Head Neck Surg* 1993;109:871–876

Sixteen cases of "glandular" neoplasms are presented. In 5 patients, angiography was "abnormal" (no details); in 3, angiography was normal. CT and MR studies are never mentioned, although "radiographic evidence of bony erosion or destruction seem to be indicative of a poor prognosis." Histologically benign lesions can behave aggressively. Two photomicrographs.□JLW

Goldstein MS, Bowen BC, Balkany T. **Malignant hemangioendothelioma of the temporal bone masquerading as glomus tympanicum.** *Ann Otol Rhinol Laryngol* 1994;103:156–169

A 62-year-old man underwent left middle-ear exploration for a pulsatile mass believed to be a glomus tympanicum tumor. A diagnosis of hemangioma was made initially, but histopathologic examination of a subsequent recurrence demonstrated pleomorphism and bony invasion consistent with low-grade angiosarcoma (malignant hemangioendothelioma). Most of these lesions occur in the long bones with several having been diagnosed in the head and neck. Four good-quality MRs.□JDS

Neck and Nasopharynx

Shimizu KT, Selch MT, Fu Y-S, Anzai Y, Lufkin RB. **Osteosarcoma metastatic to the larynx.** *Ann Otol Rhinol Laryngol* 1994;103:160–163

Three good-quality MRs demonstrate a submucosal right laryngeal mass involving the thyroid cartilage diagnosed 10 years after above-the-knee amputation for an osteogenic sarcoma of the right proximal tibia. The authors believe this to be the first case in the literature of an osteosarcoma metastatic to the larynx.□JDS

Wax MK, Yun KJ, Omar RA. **Extramedullary plasmacytomas of the head and neck.** *Otolaryngol Head Neck Surg* 1993;109:877–885

Three CT images and one MR image nicely underscore the authors' point that this rare tumor may "present a diagnostic and therapeutic challenge." Clinically, the tumor often presents as a submucosal mass. Radiographically, the tumor resembles more frequent lesions such as squamous cell cancer or a metastasis.□JLW

Anand VK, Raila FA, McAuley JR, Reed JM. **Giant pseudoaneurysm of the extracranial vertical [sic] artery.** *Otolaryngol Head Neck Surg* 1993;109:1057–1060

An unusual report of a (presumably) posttraumatic vertebral (not "vertical") artery pseudoaneurysm. The enormous mass eroded vertebral body and compressed spinal cord and narrowed the airway so the patient required tracheostomy. One CT, two MRs, and a carotid arteriogram.□JLW

Biavati MJ, Khan A, Kessler C. **Disseminated *Pneumocystis carinii* infection involving the neck and nasopharynx.** *Otolaryngol Head Neck Surg* 1993;109:773–776

This case report describes a hemophiliac with acquired immunodeficiency syndrome whose CT scan showed a nasopharyngeal mass with stippled calcifications. Extrapulmonary pneumocystis seems to be more frequent in patients using aerosolized pentamidine prophylaxis. Pneumocystis in viscera and lymph nodes may calcify. Pneumocystis should therefore be added to the limited differential diagnosis (fungus, hemangioma, thyroid metastases) of a calcified nasopharyngeal mass.□JLW

Trimas SJ, Mancuso A, de Vries EJ, Cassisi NJ. **Avascular carotid body tumor.** *Otolaryngol Head Neck Surg* 1994;110:131–135

This unusual carotid body tumor enhances only slightly more than skeletal muscle on dynamic CT. On MR, the "salt and pepper" appearance is absent. An early arterial-phase image from a common carotid arteriogram shows characteristic splaying of the internal and external carotid arteries but no tumor "blush." The anatomic location of the tumor suggests the diagnosis.□JLW

Bent JP III, Porubsky ES. **The management of blunt fractures of the thyroid cartilage.** *Otolaryngol Head Neck Surg* 1994;110:195–212

CT provides a useful "road map" for three types of thyroid cartilage fracture: nondisplaced, moderately displaced, and severely displaced. The extent of injury determines management. Three CT images at suboptimal soft-tissue algorithms, two clinical photos, one of which could have been taken by the Hubble telescope before it was repaired, or cervical ecchymosis as claimed.□JLW

Wiggs WJ, Sismanis A. **Cystic hygroma in the adult: two case reports.** *Otolaryngol Head Neck Surg* 1994;110:239–241

Lest we forget, congenital lesions can be diagnosed in adults. This short paper describes two adults who presented with posterior cervical cystic hygroma. One patient had a CT scan (not shown); the other patient's T2-weighted MR image shows a hyperintense mass labeled "enhancing mass." Oh, well.□JLW

Thaler ER, Tom LWC, Handler SD. **Second branchial cleft anomalies presenting as pharyngeal masses.** *Otolaryngol Head Neck Surg* 1993;109:941–944

One MR image of a cystic tonsillar pillar mass makes the authors' point. A fistulagram of a second branchial cleft sinus tract is also shown. The embryology is discussed.□JLW

Woods RH, Saunders JR, Pearlman S, Hirata RM, Jaques DA. **Anaplastic carcinoma arising in a thyroglossal duct tract.** *Otolaryngol Head Neck Surg* 1993;109:945–949

Most cases of carcinoma arising in a thyroglossal duct tract are papillary or mixed papillary-follicular carcinomas. This is an anaplastic carcinoma arising in the tract; both tumors may have originated in papillary adenocarcinoma. One CT.□JLW

Pediatric Neuroradiology and Congenital Malformations

Hester TO, Harris JP, Kenny JF, Albernaz MS. **Retropharyngeal cellulitis: a manifestation of Kawasaki disease in children.** *Otolaryngol Head Neck Surg* 1993;109:1030–1033

Remember Kawasaki disease? This multisystem vasculitis of unknown origin, also called mucocutaneous lymph node syndrome, mainly affects young children. Except for aseptic meningitis, it is unlikely to bring patients to the attention of a neuroradiologist. This is the first report of retropharyngeal cellulitis in Kawasaki disease. Two lateral neck films, and two clinical photographs.□JLW

Arjmand EM, Lusk RP, Muntz HR. **Pediatric sinusitis and subperiosteal orbital abscess formation: diagnosis and treatment.** *Otolaryngol Head Neck Surg* 1993;109:886–894

Orbital complications of sinusitis are inflammatory edema, orbital cellulitis, subperiosteal abscess, orbital abscess, and cavernous sinus thrombosis. All 18 patients in this study underwent CT scanning; some had MR studies. The authors could have shown a better CT image of subperiosteal abscess.□JLW

Weber PC, Cass SP. **Neurotologic manifestations of Chiari I malformation.** *Otolaryngol Head Neck Surg* 1993;109:853–860

Patients with unsuspected Chiari I malformations may present to otolaryngologists with tinnitus, deafness, dizziness, dysphagia, vocal cord paresis, and nystagmus. Tests of oculomotor function, vestibular function, and vestibular-visual interaction are useful in identifying a Chiari I malformation underlying a balance disorder. One sagittal MR.□JLW

Hartig G, Koopmann C, Esclamado R. **Infantile myofibromatosis: a commonly misdiagnosed entity.** *Otolaryngol Head Neck Surg* 1993;109:753–757.

This rare lesion may be solitary or multicentric with or without visceral involvement. Visceral involvement may prove fatal; the other forms are amenable to local excision. One of the cases reported here is illustrated with a CT scan demonstrating an expansile, lytic process of the temporal squamosa.□JLW

Seizure Disorders

Murro AM, Park YD, King DW, et al. **Seizure localization in temporal lobe epilepsy: a comparison of scalp-sphenoidal EEG and volumetric MRI.** *Neurology* 1993;43:2395–2399

In 18 of 20 patients with temporal lobe epilepsy, MR and electroencephalographic location criteria were met in 9 patients, MR criteria alone in 3 patients, and electroencephalographic criteria alone in 3 patients. These results suggest that combining MR and electroencephalography will correctly locate the side of the seizure in most patients with temporal lobe epilepsy.□SMW

Huttenlocher PR, Taravath S, Mojtahedi S. **Periventricular heterotopia and epilepsy.** *Neurology* 1993;44:51–55

Epilepsy may be a major clinical manifestation of periventricular heterotopia being seen in six members of one family in four generations. None of the patients had tuberous sclerosis.□SMW

Jackson GD, Kuzniecky RI, Cascino GD. **Hippocampal sclerosis without detectable hippocampal atrophy.** *Neurology* 1993;44:42–46

Abnormal T1- and T2-weighted sagittal abnormalities, suggesting the diagnosis of unilateral hippocampal sclerosis, can occur with normal hippocampal volume measurements.□SMW

Degenerative and Metabolic Disease and Aging

Katz D, Taubenberger JK, Canella B, McFarlin DE, Raine CS, McFarland HF. **Correlation between magnetic resonance imaging findings and lesion development in chronic, active multiple sclerosis.** *Ann Neurol* 1993;34:661–669

A single case of chronic relapsing multiple sclerosis studied at autopsy reveals that the pathologic basis of enhancing recurrent lesions corresponded to areas of demyelination with intense inflammatory activity and dense perivascular cuffs with edematous centers and parenchymal mononuclear cellular infiltration. Chronic nonenhancing lesions consisted of fibrous astrogliosis.□NA

Matthews PM, Andermann F, Silver K, Karpati G, Arnold DL. **Proton MR spectroscopic characterization of differences in regional brain metabolic abnormalities in mitochondrial encephalomyopathies.** *Neurology* 1993;43:2484–2490

Different localized brain proton MR spectra can be seen in patients with the MERRF syndrome, the MELAS syndrome, and the Kearns-Sayre syndrome. This important paper further highlights the potential value of cerebral MR spectroscopy.□SMW

Charnas LR, Marini JC. **Communicating hydrocephalus, basilar invagination, and other neurologic features in osteogenesis imperfecta.** *Neurology* 1993;43:2603–2608

Neuroimaging studies showed communicating hydrocephalus in 17 of 76 patients with osteogenesis imperfecta. The clinically important neurologic complications were brain stem compression from basilar invagination, skull fractures, and seizure disorders.□SMW

Ophthalmologic Radiology

Heinz GW, Nunery WR, Grossman CB. **Traumatic chiasmal syndrome associated with midline basilar skull fractures.** *Am J Ophthalmol* 1994;117:90–96

Two well-illustrated (CT and MR) and well-documented case reports of patients who suffered traumatic chiasmal injury after blunt frontal head trauma. CT demonstrates skull base fractures in both cases. MR demonstrates a swollen optic chiasm in both cases as well. The latter findings are somewhat subtle but, at least in case 1, clearly abnormal. Both cases were associated with diabetes insipidus. A succinct discussion is included.□JDS

Singh AD, Husson M, Shields CL, et al. **Primitive neuroectodermal tumor of the orbit.** *Arch Ophthalmol* 1994;112:217–221

Moderate-quality CT, histopathology sections, and electron microscopy demonstrate a hypodense (presumably enhancing) extraconal mass in a 10-year-old girl. There was hyperostosis of the lateral orbital wall. The authors emphasize the difficulty in distinguishing primitive neuroectodermal tumor from Ewing sarcoma, which required detailed pathologic examination. The discussion is thorough yet concise and to the point.□JDS

Holzberg N, Ward RF. **Bilateral congenital dacrocystoceles.** *Otolaryngol Head Neck Surg* 1993;109:1074–1077

Failure of canalization of the nasal end of the nasolacrimal duct leads to marked dilatation of the duct. Rarely, the lacrimal sac is also dilated (dacryocystocele). The two CT images and a clinical photo of this 13-day-old with bilateral dacryocystoceles are excellent. An MR study, which was also obtained (why?), is not shown.□JLW

Spine

Thorpe JW, Kidd D, Kendall BE, et al. **Spinal cord MRI using multi-array coils and fast spin echo, I: technical aspects and findings in healthy adults.** *Neurology* 1993;43:2625–2631

Kidd D, Thorpe JW, Thompson AJ, et al. **Spinal cord MRI using multi-array coils and fast spin echo, II: findings in multiple sclerosis.** *Neurology* 1993;43:2632–2637

Two back-to-back papers describing the value of spinal cord MR with multiarray coils and fast spin-echo techniques in, first, healthy patients and, second, those with definite multiple sclerosis. More spinal cord lesions were located in the cervical cord than in the thoracic cord. Cord lesions were seen in 59 of 80 patients with multiple sclerosis (74%).□SMW

Burkus JK, Denis F. **Hyperextension injuries of the thoracic spine in diffuse idiopathic skeletal hyperostosis.** *J Bone Joint Surg* 1994;2:237–243

Four patients had multisegmental ankylosis of the thoracic and lumbar spine caused by diffuse idiopathic skeletal hyperostosis, with hyperextension fracture-dislocation injuries, all of which occurred between the 7th and 11th thoracic vertebrae. The authors emphasize firmly supporting the spine at all times before surgery, and that these patients are unstable and should be surgically stabilized. Three figures, with MR.□JSR

Interventional Neuroradiology

Fraser KW, Halbach VV, Teitelbaum GP, et al. **Endovascular platinum coil embolization of incompletely surgically clipped cerebral aneurysms.** *Surg Neurol* 1994; 41:4–8

Two cases of residual aneurysms after surgical clipping were managed by intravascular placement of platinum coils. Authors conclude that the endovascular treatment of residual cerebral aneurysm should be considered in patients who are thought not to be reoperative candidates for medical reasons, have difficult reoperative anatomy, or refuse a second craniotomy.□JSR

Nakagawa H, Fujita T, Kubo S, et al. **Selective intraarterial chemotherapy with a combination of etoposide and cisplatin for malignant gliomas: preliminary report.** *Surg Neurol* 1994;41:19–27

The authors use selective intraarterial chemotherapy of etoposide and cisplatin in 20 patients with malignant gliomas. They report their experience in developing what they consider a safe technique for superselective intraarterial chemotherapy including drug dosage, catheter placement, and infusion time. CT and MR showed improvement in 13 patients, but no increase in survival time.□JSR

Mandible and Maxilla

McGuirt WF, Myers EN. **Ganglion of the temporomandibular joint: presentation as a parotid mass.** *Otolaryngol Head Neck Surg* 1993;109:950–953

A ganglion is a synovial-lined cyst. Temporomandibular joint ganglia are rare. This nicely illustrated report (two MR images) reminds the reader that temporomandibular joint disease can mimic parotid disease clinically.□JLW

Ohlms LA, Jones DT, Schriebstein J, Ferraro N. **Sclerosing osteomyelitis of the mandible.** *Otolaryngol Head Neck Surg* 1993;109:1070–1073

Sclerosing osteomyelitis tends to occur in younger patients whose active osteoblasts lay down subperiosteal new bone in response to infection. These three children with *Actinomyces israelii* osteomyelitis are unusual because the organism rarely affects bone. The clinical impression may be of parotid disease. Two CTs.□JLW

Anatomy

Sato K, Watanabe T, Yoshimoto T, Kameyama M. **Magnetic resonance imaging of C2 segmental type of vertebral artery.** *Surg Neurol* 1994;41:45–51

Cases of a congenital variation of the vertebral artery, called the C2 segmental type, in which the vertebral artery does not pass through the transverse foramen of the atlas but runs medioposterior to it and entering into the spinal canal.□JSR

Pappas DG Jr, Hoffman RA, Cohen NL, Holliday RA, Pappas DG Sr. **Petrous jugular malposition (diverticulum).** *Otolaryngol Head Neck Surg* 1993;109:847–852

Four patients with unusual jugular anatomy are presented. The clinical significance of these variants is questionable, although preoperative identification can prevent the surgeon from inadvertently entering the vein. CT and MR, one angiogram.□JLW

Nose, Paranasal Sinuses, Face, and Oral Cavity

Armengot M, Barona R, Garin L, Sabater V, Basterra J. **Ethmoid cholesterol granuloma.** *Otolaryngol Head Neck Surg* 1993;109:762–765

The authors describe cholesterol granuloma as a foreign body granuloma around cholesterol crystals (degradation products from prior hemorrhage). This brief case report shows a well-circumscribed soft-tissue mass in the ethmoid sinus. The bone is thinned, and the mass, which bulges into the orbit, looks a lot like a mucocele. Axial CT, plus reformatted coronal, sagittal, and 3-D.□JLW

Rath-Wolfson L, Talmi YP, Halpern M, Levit I, Zohar Y, Gal R. **Cholesterol granulomas of the maxillary sinus presenting with nasal obstruction.** *Otolaryngol Head Neck Surg* 1993;109:956–958

Cholesterol granulomas are being found everywhere. This CT image shows garden-variety maxillary sinus mucosal thickening. The authors say a nasal mass (not shown) was "associated with a cholesterol granuloma" in the antrum. However, the antral mucosa, not the mass, was the source of the characteristic histologic findings.□JLW