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Diagnosis of lumbar synovial cysts.

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Letters

The STIR Sequence in MR Imaging

A recent paper on MR imaging of infectious spondylitis [1] elaborated on and substantiated a previous report [2] of STIR in the evaluation of spinal infection. However, it also contained an important error in pulse sequence nomenclature: STIR was described as "short T*1* inversion recovery."

The STIR sequence was described and named by Drs. Bydder, Young, and Steiner [3, 4] as "short TI inversion recovery." Typically this technique uses TI (time to inversion) values of 100–160 msec vs the earlier convention of long TI times of 400–600 msec—hence its name. In the article by Thrush and Enzmann [1], STIR is repeatedly referred to as "short T*1* inversion recovery."

We use STIR extensively in our practice [2, 5] and frequently have had to correct well-intentioned copy editors who change "TI" to "T1" because of their lack of familiarity with inversion-recovery imaging sequences. Many such errors undoubtedly have entered the literature because of oversights in proofreading. However, I have seen this error with increasing frequency in a variety of publications, including peer-reviewed journals. As STIR is used for detection of substances with long T1 and long T2 [3], this misnomer is not only inaccurate but misleading. STIR is also occasionally referred to as the "short tau inversion recovery" sequence. This is also incorrect. STIR is an inversion-recovery–spin-echo sequence with a TE of 30–40 msec; therefore the tau time (TE/2) is in fact rather long, not short.

I am concerned that this incorrect nomenclature may be accidentally perpetuated by authors, reviewers, editors, and readers who have an incomplete understanding of the STIR sequence. I encourage all who refer to STIR in their publications to carefully review the original articles [3, 4] and to refer to this sequence by its correct and descriptive name. Careful proofreading of articles is also necessary to ensure that such errors do not inadvertently become accepted into the scientific literature.

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REFERENCES

1. Thrush A, Enzmann D. MR imaging of infectious spondylitis. *AJNR* **1990**;11:1171–1180
2. Bertino RE, Porter BA, Stimac GK, Tepper SJ. Imaging spinal osteomyelitis and epidural abscesses with short TI inversion recovery (STIR). *AJNR* **1988**;9:563–564
3. Bydder GN, Young IR. MR imaging: clinical use of the inversion recovery sequence. *J Comput Assist Tomogr* **1985**;9:659–675
4. Steiner RE. Magnetic resonance imaging: its impact on diagnostic radiology. *AJR* **1985**;145:883–893
5. Stimac GK, Porter BA, Olson DO, Gerlach R, Genton M. Gadolinium-DTPA-enhanced MR imaging of spinal neoplasms: preliminary investigation and comparison with unenhanced spin-echo and STIR sequences. *AJNR* **1988**;9:839–846

Editor's note.—Obviously an error was made by all parties—authors, editors, and copyeditors. My thanks to Dr. Porter for bringing this oversight to our attention.

Diagnosis of Lumbar Synovial Cysts

I was interested in the reports presented by Liu et al. [1] and Silbergleit et al. [2] of lumbar synovial cysts diagnosed on the basis of myelographic, CT, and MR findings. However, I would like to emphasize the value of a simple diagnostic and therapeutic procedure: arthrography of the facet joints.

When a synovial cyst is visualized on CT scanning, injection of iodinated contrast material into the facet joint in question, under fluoroscopic guidance, is a simple method for diagnosing the cyst [3]. Arthrography with an oblique view separates the cyst from the superior and inferior recesses that are superimposed in the lateral view [4].

A synovial cyst always communicates with the facet joint and can be opacified by injecting the joint with contrast material. If there is no communication between the cyst and the joint, the cyst can be punctured, opacified, and finally eliminated by CT-guided needle aspiration [5].

In my experience, synovial cysts always communicate with the joint, and injection (sometimes difficult in a severely degenerated facet joint) is easily performed under fluoroscopic guidance. CT scanning before the injection is useful to determine the exact position of entry into the joint, which is usually medial to the articular line visualized on fluoroscopy in the oblique view. It is necessary to use a curved needle for this procedure.

If the diagnosis is questionable [6], or the cyst is associated with another lesion (e.g., disk herniation at the same side), CT arthrography (CT scanning after injection of contrast medium) clearly shows the origin of each lesion [4].

When the cyst is visualized, a few milliliters of corticosteroid is injected. This ruptures the joint capsule and often results in a lasting cessation of pain. I think that it is only when the pain reappears after such a procedure that an operation (expensive and invasive) should be performed. I think an attempt should be made to cure the pain related to a cyst by using the technique described here.

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REFERENCES

1. Liu SS, Williams KD, Drayer BP, Spetzler RF, Sonntag VKH. Synovial cysts of the lumbosacral spine: diagnosis by MR imaging. *AJNR* **1989**;10:1239–1242
2. Silbergleit R, Gebarski SS, Brunberg JA, McGillicudy J, Blaivas M. Lumbar synovial cysts: correlation of myelographic, CT, MR, and pathologic findings. *AJNR* **1990**;11:777–779
3. Vallee C, L'huillier F, Dupont AM, Rousselin B, Richard O, Chevrot A. Aspects tomodensitometriques des kystes ariculaires posterieurs. *Rev Med Orthop* **1990**;20:8–9
4. Vanneroy F, Benazza A, Theron J. Kyste synovial associe a une hernie discale homolaterale; a propos de 2 observations. *Rachis* **1990**;2:161–166
5. Abrahams JJ, Wood GW, Eames FA, Hicks RW. CT-guided needle aspiration biopsy of an intraspinal synovial cyst (ganglion): case report and review of the literature. *AJNR* **1988**;9:398–400
6. Maupin WB, Naul LG, Kanter SL, Chang CS. Synovial cyst presenting as a neural foraminal lesion: MR and CT appearance. *AJR* **1989**;153: 1231–1232

Reply

The purpose of our article [1] was to draw attention to the MR appearance of lumbar synovial cysts. This is important because large numbers of patients are having MR of the lumbosacral spine as the first or only diagnostic imaging examination. The diagnosis can almost always be made on the basis of MR or CT findings. CT arthrography is usually not necessary in the diagnostic evaluation. We are not experienced with the technique of corticosteroid injection for definitive treatment of synovial cysts, but we look forward to reports of the efficacy of this technique.

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REFERENCE

1. Silbergleit R, Gebarski SS, Brunberg JA, McGillicudy J, Blaivas M. Lumbar synovial cysts: correlation of myelographic, CT, MR, and pathologic findings. *AJNR* **1990**;11:777–779

MR-Guided Needle Biopsy with a High-Field-Strength MR System

To date, published reports [1–3] of MR-guided needle biopsy have described the use of low- and mid-field-strength systems (0.3–0.5 T). We recently used a 1.5-T MR system (GE Signa, Milwaukee, WI) and an infratemporal fossa approach to perform MR-guided aspiration biopsy of a clival mass.

The procedure was performed without complication. Of note, no significant increase in geometric image distortion occurred at the higher field strength. Also, the MR-compatible needle (E-Z-EM, Inc., Westbury, NY) showed no increased torque in the higher magnetic field strength. Thus, high-field-strength instruments can be used to perform certain interventional MR procedures.

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REFERENCES

1. Mueller PR, Stark DD, Simeone JF, et al. MR-guided aspiration biopsy: needle design and clinical trials. *Radiology* **1986**;161:605–609
2. Lufkin R, Teresi L, Hanafee W. New needle for MR-guided aspiration cytology of the head and neck. *AJR* **1987**;149:380–382
3. Duckwiler G, Lufkin R, Hanafee W. MR-directed needle biopsies. *Radiol Clin North Am* **1989**;27(2):255–263

MR Imaging of Migraine

We are writing in response to the article by Osborn et al. [1], "MR Imaging of the Brain in Patients with Migraine Headaches," that appears in the May/June issue of the *AJNR*. Osborn et al. found high-intensity foci in the white matter in five of 41 patients and in only two (6%) of 36 patients less than 40 years old. Figures are cited from earlier studies in which 33% (average of three studies) of patients had high-intensity foci in the white matter. Finally, Osborn et al. conclude that high-intensity foci in the white matter are "found less commonly in all migraineurs than previously thought." The authors do not comment on why their results are different from those of earlier studies. Two recent studies with findings that differ from those of Osborn et al. were not included. We would like to report these two studies and address possible explanations of why these differences occurred.

In March 1991, Kuhn and Shekar [2] published a study of the MR findings of 74 patients with migraine. All the patients were less than 40 years old, and 26% had foci in the white matter. In August 1990, one of us presented a study (Prager J et al., presented at the 9th annual meeting of the Society for Magnetic Resonance in Medicine, August 1990) that included the MR findings in 100 patients with severe headache. Forty-one of the patients who had migraines were less than 40 years old. Again, 26% had high-intensity foci in the white matter. Thus, in a total of 115 patients less than 40 years old, high-intensity foci in the white matter were a common finding.

We think that Osborn et al. found fewer lesions in their study because of the population of patients and because of the methods used. Most of their patients were men, whereas most patients with migraine are women. Their patients were referred from a hospital clinic, whereas the patients in the other studies were referred from specialty headache clinics. The threshold level and motivation to visit a Navy clinic vs a headache clinic may be different and could result in two distinct groups. Finally, 14 of the patients of Osborn et al. were studied on a 0.35-T unit, and T2-weighted coronal images were obtained on only a limited number. All of the patients in our group were studied on a 1.5-T scanner, and all had coronal T2-weighted imaging. The strength of the magnet may not be important, as some of the other studies used magnets of $\leq$1.5 T. We found that T2-weighted coronal images were helpful in several cases in which visualization of the lesions on axial images was questionable.

In conclusion, the literature supports the conclusion that high-intensity foci in the white matter occur frequently (26%) in migraine patients who are less than 40 years old. Our observations show that the prevalence of high-intensity foci in the white matter increases as patients become older. We think that Osborn et al. found a low prevalence because of their select population of patients and the size of the population.

Incidentally, in one of the cases in the article by Osborn et al., the white matter lesion was subcortical rather than periventricular. We have seen a tendency to have subcortical lesions in many of our patients who have migraine, and we use it as a point for differentiation. The other featured patient in the article by Osborn et al. was a 66-year-old who had a periventricular increased signal. In our group, the findings in this patient would not have qualified as high-intensity foci in the white matter of a migraine patient because of the location of the lesion and the age of the patient.

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REFERENCES

1. Osborn RE, Adler DC, Mitchell CS. MR imaging of the brain in patients with migraine headaches. *AJNR* **1991**;12:521–524
2. Kuhn MJ, Shekar PC. A comparative study of magnetic resonance imaging and computed tomography in the evaluation of migraine. *Comput Med Imaging Graph* **1990**;14:149–152

Editor's note.—The preceding letter was referred to Dr. Osborn. He has chosen not to comment, as he did not think there was additional information he could add that was not already addressed in the original paper.