Dual-Energy CT May Aid Diagnosis of Gout

BY SHERRY BOSCHERT
San Francisco Bureau

SAN FRANCISCO — Dual-energy CT scans showed red-colored uric acid deposits in 20 consecutive patients with clinically obvious tophaceous gout but not in 10 control subjects with other nongout joint conditions.

The 100% sensitivity and specificity of dual-energy computed tomography (DECT) scans to identify uric acid deposits could provide a sorely needed accurate imaging tool to aid in the diagnosis of gout and its response to treatment, Dr. Abdullah Al-Abdulrahman Alarfaj said at the annual meeting of the American College of Rheumatology.

DECT assesses chemical composition and provides specific color-coded displays to differentiate between uric acid (which shows up as red), calcium (blue), and other renal calculi, previous investigators have shown.

The current proof-of-concept study, in addition to assessing the accuracy of DECT in gout patients, also measured the uric acid burden in peripheral joints and performed a computerized quantification of tophus volume. The volume of uric acid deposits in each anatomic area was measured by automated volume estimation software. The sum of tophus volume in the hands, wrists, elbows, feet, ankles, and knees comprised the total uric acid volume of peripheral joints.

DECT scans identified 440 areas of urate deposition, compared with 111 areas identified on clinical examination, reported Dr. Alarfaj of the University of San Francisco Medical Center.

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DR. WORTMANN

DECT shows uric acid deposits in red, while calcium in bone looks blue.

British Columbia, Vancouver, and his associates. The investigators have no conflicts of interest related to this study.

DECT could be useful in detecting subclinical tophus deposits and the extent of intra- and extra-articular gout, Dr. Alarfaj suggested. Treatment response might be monitored by using DECT to measure both individual tophus volume and total tophus burden.

This relatively new technology also may prove useful in evaluating nodular lesions, diagnosing concurrent gout in patients with other arthropathies, and identifying urate deposits in body areas that are atypical for gout or challenging to assess.

An individual DECT scan can cost about one-sixth of the amount for an MRI, Dr. Alarfaj’s senior investigator, Dr. Hyon Choi, said during a question-and-answer session. The DECT hardware equipment is expensive but is used for a variety of purposes, such as imaging coronary artery calcifications and renal calculi, added Dr. Choi, also of the university.

The technology provides dramatic color displays and can be used to create impressive three-dimensional images of uric acid deposits that could aid clinicians in communicating about the disease to patients with gout, he added.

The patients in the gout group of the study had an average 12-year history of the disease and nine painful joints in the previous year. The mean serum uric acid level was 529 micromol/L. The patients had a mean age of 63 years, 15 (75%) were men, and 12 (60%) were white.

Comorbid conditions were present in 17 patients (85%).

New Agents for Gout Provide Alternatives to Allopurinol

BY NANCY WALSH
New York Bureau

FORT LAUDERDALE, FLA. — The likely approval of febuxostat for the treatment of gout means that there soon will be an alternative for the underserved group of patients with severe disease who cannot tolerate allopurinol.

No new urate-lowering treatments have been approved for gout since 1964, but the advisory panel of the Food and Drug Administration voted 12-0, with 1 abstention, in favor of approval for this nonpurine selective xanthine oxidase inhibitor. Although the FDA is not required to follow the recommendations of its advisory panel, it usually does so.

Febuxostat is structurally distinct from allopurinol, another xanthine oxidase inhibitor that also exerts inhibitory activity on other enzymes involved in purine and pyrimidine metabolism, according to Dr. Robert L. Wortmann, professor of medicine, Dartmouth-Hitchcock Medical Center, Lebanon, N.H.

Experience to date with febuxostat in more than 4,000 patients has shown that, unlike with allopurinol, there appears to be no need for dose adjustment in patients with mild to moderate renal dysfunction. Dosage concerns exist for patients with renal insufficiency taking allopurinol, because of the possible occurrence of toxic epidermal necrolysis.

There also have been a number of deaths during trials of uricase, although apparently none of these deaths could be attributed to the drug. For example, one patient who died was a 92-year-old man with severe tophaceous gout who had had three bypass surgeries and a stroke previously, and who succumbed to heart disease.

“I think the investigators were not as selective as they could have been in patient selection, which is unfortunate because this to me would be an exciting alternative for patients with severe tophaceous gout. Uricase could be given for a few doses to get the urate really low and mobilize the crystals as much as possible, and then the patient could be maintained on another agent once it’s under control,” he said.

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For a related video with Dr. Wortmann, go to www.youtube.com/InternalMedicineNews (search for 63592).

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A 3-D volume-rendered image of the same patient shows many tophi (red).

There have been no reports of hypersensitivity reactions to allopurinol, most likely because of the inhibitory activity on other enzymes involved in purine and pyrimidine metabolism. Although the drug is very effective for lowering serum urate levels, there appears to be no need for dose adjustment in patients with mild to moderate renal dysfunction.

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