Abstract #35768

Click [here] to print this page now.

Knee Effusion: Sensitivity and Specificity Of Ultrasound For The Identification Of Calcium Pyrophosphate Crystals

Program Book Publication:
Erika Catay, Rheumatology Unit, Internal Medical Services, Hospital Italiano de Buenos Aires

Abstract Supplement and Online Publication:
These authors will be published in a supplement of the Arthritis & Rheumatism journal (on-line only) as well as the abstracts section of the My Annual Meeting website (www.ACRAnnualmeeting.org). Erika Catay1, Santiago Ruta1, Javier Rosa1, David A. Navarret, Marina Scolnik2, Ricardo Garcia-Monaco3 and Enrique R. Soriano4, 1Rheumatology Unit, Internal Medical Services, Hospital Italiano de Buenos Aires, 2Rheumatology Section, Hospital Italiano de Buenos Aires, 3Radiology and Iugenology Department, Hospital Italiano de Buenos Aires, 4Rheumatology Unit, Internal Medical Services, Hospital Italiano de Buenos Aires, Instituto Universitario Hospital Italiano de Buenos Aires, and Fundacion PM Catoggio

Abstract Text
Character count for abstract text: 2656 (94 Characters Remaining)

Background/Purpose: Calcium pyrophosphate deposition disease (CPPD) is an important cause of arthritis mainly in elderly people. The final diagnosis is based on the identification of calcium pyrophosphate (CPP) crystals in the synovial fluid (SF). Our objective was to evaluate the sensitivity and specificity of ultrasound (US) and conventional radiography for the detection of CPP crystals in patients with knee effusion.

Methods: Consecutive patients > 50 years old with knee effusion on clinical examination seen at the out-patient Rheumatology Unit who underwent aspiration of SF including microscopic investigation of SF samples, were included. In all patients, US and conventional radiography (CR) of the involved knee were performed after arthrocentesis. US examinations were carried out by a rheumatologist trained in this imaging technique who was blinded to all clinical and CR data. A MyLab 70 JV (Esaote Biomedica, Genoa, Italy) machine equipped with a broadband 4-13 MHz linear probe was used. US scanning technique was performed according to standard methods, including suprapatellar view (transverse and longitudinal) with knee in maximal possible flexion to assess femoral hyaline cartilage and lateral and medial longitudinal views with knee extended (as possible) to evaluate lateral and medial meniscal fibrocartilage, respectively. The following US abnormal findings were considered indicative of CPPD: 1) hyperechoic bands within the femoral hyaline cartilage layer; 2) hyperechoic sparking spots in meniscal fibrocartilage. CR were read by an experienced rheumatologist blinded to all clinical and US data searching for radiological evidence of chondrocalcinosis. SF was analyzed by an experienced biochemist, blinded to clinical and imaging data, using plain light and polarizing light microscopy.

Results: A total of 75 knees were evaluated in the same number of patients [39 male; mean age (SD): 66.6 years (15.7)]. Twenty-four patients had previous diagnosis of primary knee osteoarthritis (OA), 15 rheumatoid arthritis, 10 CPPD (McCart criteria), 8 psoriatic arthritis and 5 systemic lupus erythematosus. Thirteen patients had knee effusion without definitive diagnosis of any rheumatic condition. Analysis of synovial fluid revealed CPP crystals in 15 out of 75 (20%) examined knees from 9 patients with previous diagnosis of CPPD, 3 patients with previous diagnosis of knee OA and 3 patients without previous definitive diagnosis of a rheumatic condition.

Table shows the US and CR diagnostic test properties for the detection of CPP crystals using SF findings as the gold standard.

<table>
<thead>
<tr>
<th>Synovial fluid analysis</th>
<th>Sensitivity (95% CI)</th>
<th>Specificity (95% CI)</th>
<th>Positive predictive value (95% CI)</th>
<th>Negative predictive value (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultrasound</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>9</td>
<td>2</td>
<td>60% (32.33-83.57)</td>
<td>90.62% (80.69-96.46)</td>
</tr>
<tr>
<td>Negative</td>
<td>6</td>
<td>58</td>
<td>96.67% (88.45-99.50)</td>
<td>(48.24-97.18)</td>
</tr>
<tr>
<td>Conventional radiology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>6</td>
<td>10</td>
<td>40% (16.43-67.67)</td>
<td>84.75% (73-92.76)</td>
</tr>
<tr>
<td>Negative</td>
<td>9</td>
<td>50</td>
<td>83.3% (71.47-91.69)</td>
<td>37.5% (15.29-64.53)</td>
</tr>
</tbody>
</table>

Conclusion: US showed high specificity with good sensitivity to detect CPP crystals in patients with knee effusion. Compared with CR, US had better specificity and sensitivity. US may be used in daily rheumatologic practice when CPPD is suspected.

Disclosure: E. Catay, None; S. Ruta, None; J. Rosa, None; D. A. Navarta, None; M. Scolnik, None; R. Garcia-Monaco, None; E. R. Soriano, Abbott Immunology Pharmaceuticals, 2, Bristol-Myers Squibb, 2, Genzyme Corporation, 2, Pfizer Inc, 8, Abbott Immunology Pharmaceuticals, 8, Janssen Pharmaceutica Product, L.P., 8, UCB, 8, Bristol-Myers Squibb, 8.

Topic Selection: Metabolic and Crystal Arthropathies

Submitter's E-mail Address: enrique.soriano@hospitalitaliano.org.ar
Preferred Presentation Format: No Preference

Keywords: Knee, calcium pyrophosphate dihydrate (CPPD) and ultrasound
We have agreed to the following statements:

I. I affirm that I have read and agree to the ACR Annual Meeting general guidelines and policies for abstract submission outlined in the 2013 Call for Abstracts Brochure.

II. I affirm that any work with human or animal subjects reported in the abstract complies with the guiding principles for experimental procedures found in the Declaration of Helsinki of the World Medical Association.

III. I understand that case reports are not acceptable and will not be reviewed.

IV. I understand that if the abstract reports the results of a clinical trial not yet approved by a regulatory agency, the trial phase must be indicated on the submission form.

V. I understand that an abstract is ineligible for consideration if it reports work that has been accepted for publication as a manuscript prior to the ACR submission deadline of Tuesday, June 25, 2013.

VI. I understand that this abstract, if accepted, will be under embargo until 4:30 PM Pacific Time on Saturday, October 26, 2013.

VII. I understand that abstracts submitted for the ARHP may not be dually submitted to the ACR and vice versa.

VIII. I understand that, if accepted, the American College of Rheumatology has permission to publish this abstract in printed and/or electronic formats.

IX. I understand that, if accepted for presentation, the presenting author or co-authors listed on the abstract must present the abstract during an oral and/or poster presentation.

Presenting Author
Erika Catsby, MD
Rheumatology Unit, Internal Medical Services, Hospital Italiano de Buenos Aires
Peron 4190
Buenos Aires,
Argentina
Email: erika.catsby@hospitalitaliano.org.ar -- Will not be published

Click to view Conflict of Interest Disclosure

Author Classification: Fellow in training, Adult - F3

Second Author
Santiago Ruta, MD
Rheumatology Unit, Internal Medical Services, Hospital Italiano de Buenos Aires
Peron 4190
Buenos Aires,
Argentina
Email: santiago.ruta@hospitalitaliano.org.ar -- Will not be published

Click to view Conflict of Interest Disclosure

Author Classification: Not applicable (Non-Trainee)

Third Author
Javier Rosa, MD
Rheumatology Unit, Internal Medical Services, Hospital Italiano de Buenos Aires
Peron 4190
Buenos Aires, 1181
Argentina
Phone Number: 5411495903781
Email: javier.rosa@hospitalitaliano.org.ar -- Will not be published

Click to view Conflict of Interest Disclosure

Author Classification: Not applicable (Non-Trainee)

Fourth Author