

Hepatitis C Virus-related Arthritis: Bone Scintigraphic Appearances

Abstract

A symptomatic joint involvement and arthralgia are frequent in patients with chronic hepatitis C virus (HCV) infection. However, HCV infection-related arthritis (HCVrA) affects up to 4-11% of the subjects suffering from disease. We reported a patient with HCVrA presented with the commonly accepted diagnostic clinical signs and laboratory parameters. The painful joints distinctly demonstrated increased uptake of Tc-99 m methylene diphosphonate in scintigraphy and normal findings in radiography.

Keywords: Arthritis, hepatitis C virus infection, scintigraphy

Introduction

The rheumatologic manifestations associated with hepatitis C virus (HCV) infection include arthralgia, myalgia, arthritis, vasculitis, and sicca syndrome.^[1-11] Arthralgia is relatively common in HCV, but arthritis is not.^[1-8] Scintigraphic findings in hepatitis-related arthritis have not been previously reported. We presented a patient with areas of joint pain that corresponded to the regions of increased Tc-99 m methylene diphosphonate (MDP) uptake. This demonstrates the ability of bone scan to image symptomatic joint, suggesting its potential value in the early diagnosis when compared radiography.

Case Report

We present a case of a 63-year-old male with chronic hepatitis C, who presented with bilateral symmetrical painful joints including hands, wrists, elbows, and shoulders in the upper limbs. There was no pain in low extremity joints. In addition, he described stiffness in the regions of the right shoulders joints and swelling in the right wrist and hand regions. A small cell lung cancer diagnosis was also made 2 months ago.

Laboratory findings showed elevated levels of rheumatoid factor (RF) and normal level anti-cyclic citrullinated peptides (CCPs) antibodies. The radiography of the upper and lower limbs did not show any

abnormality [Figure 1]. However, the result of a subsequent bone scan including three phase of upper extremities and whole body were grossly abnormal. The images of the whole body [Figure 2], blood pool, and delayed uptake [Figure 3] showed multiple areas of intense increased MDP uptake in the bilateral interphalangeal and metacarpophalangeal joints of hands, wrist, elbow, and shoulders and less intense increased uptake in the foot joints. There was an excellent correlation between the areas of arthritic pain and the regions of increased uptake.

In addition, in whole body scan, there was hypertrophic pulmonary osteoarthropathic appearance (affecting femora and tibiae). The increased osteoblastic activity in the region of thoracic vertebrae was determined to be spinal bone/mainly bone-marrow metastases secondary to lung carcinoma by magnetic resonance imaging.



Figure 1: Normal plain radiography of both painful hands

How to cite this article: Aktas GE, Sarikaya A, Kandemir O. Hepatitis C virus-related arthritis: Bone scintigraphic appearances. *Indian J Nucl Med* 2017;32:30-2.

**Gul Ege Aktas,
Ali Sarikaya, Ozan
Kandemir¹**

*Department of Nuclear Medicine,
Medical Faculty, Trakya
University, 22030 Edirne,
¹Department of Nuclear Medicine,
Sivas Numune Hospital, 58060
Sivas, Turkey*

Address for correspondence:

*Dr. Gul Ege Aktas, Department of
Nuclear Medicine,
Faculty of Medicine, Trakya
University, 22030 Edirne, Turkey.
E-mail: dr.gulege@yahoo.com*

Access this article online

Website: www.ijnm.in

DOI: 10.4103/0972-3919.198468

Quick Response Code:



This is an open access article distributed under the terms of the Creative Commons Attribution-Non Commercial-Share Alike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

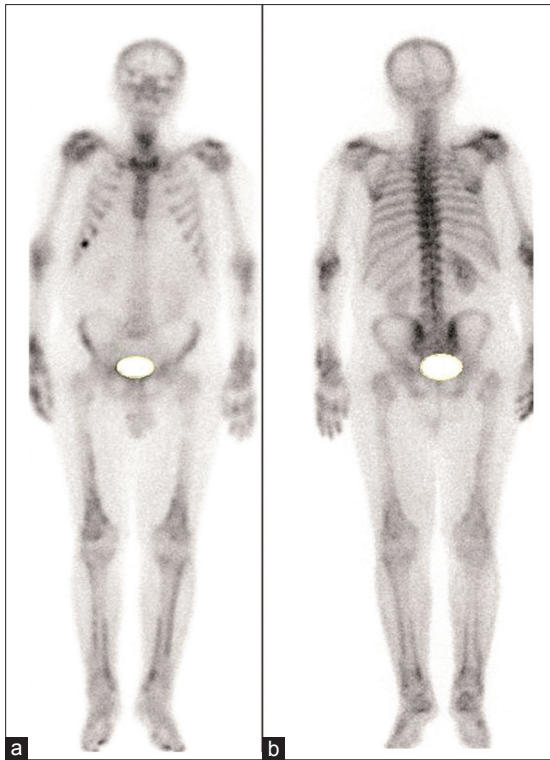


Figure 2: Anterior (a) and posterior (b) whole body bone scan demonstrated a largely symmetric polyarthropathy affecting large and small joints in the upper and lower limbs. Note the diffusely increased uptake with a parallel track pattern of hypertrophic pulmonary osteoarthropathy in the femurs and tibiae

Discussion

Several viruses have been associated with the development of inflammatory arthritis including hepatitis viruses (hepatitis B virus [HBV] and HCV), HIV, parvovirus B19, human T-cell lymphotropic virus-I, and alphaviruses.^[9-12]

Arthralgias, reported in 20–83% of HCV patients, are bilateral, symmetric, nondeforming and mainly involve knees and hands, more seldom elbows, and ankles.^[1-8] The prevalence of arthritis ranged across studies from 4% to 11%. HCV infection-related arthritis (HCVrA) is usually distinguished in two clinical subsets: A more frequent symmetrical polyarthrititis in which 50–85% of patients are RF-positive, similar to rheumatoid arthritis (RA) but less serious, and mostly intermittent mono- and oligoarthritis that involves medium and large sized joints, mainly the ankle.^[1-8] The arthropathy is nonerosive/nondeforming, and no joint erosions are seen on radiographs. In 50–80% of cases, RF is positive. An important point in distinguishing RA from HCVrA is given by the presence of anti-CCP antibodies.^[4,6,8] There are several pathogenic mechanisms by which HCV may induce arthritis.^[1-8] The most extensively studied mechanism underlying HCVrA is HCV mixed cryoglobulinemia. Other possible mechanisms include direct invasion of synovial cells by the virus, eliciting a local inflammatory response, cytokine-induced

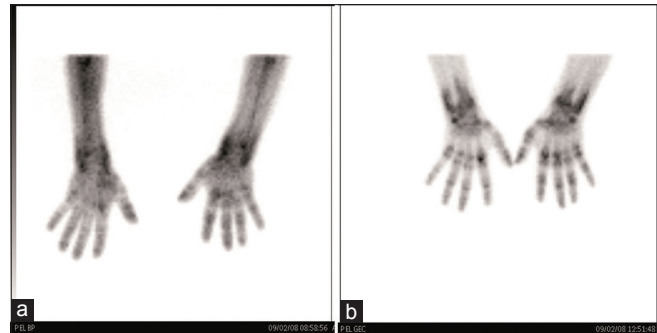


Figure 3: On bone scan of both hands, there is increased blood pool activity (a) and delayed uptake (b) in the areas of the joint involved

disease (other than cryoglobulinemia) associated with chronic, persistent HCV infection, or other mechanisms associated with reactive arthritis.

Bone scanning has been used in various forms of arthritis. An increased uptake occurs before radiographic changes are evident, which allows a more accurate estimate of disease extent and may indicate involvement in joints that are as yet asymptomatic. Pathologic features of arthropathies have been translated into various patterns of findings on scintigraphic imaging modalities.^[13] The pattern of symmetric peripheral joint involvement of RA can usually be distinguished scintigraphically from that of the rheumatoid variants (ankylosing spondylitis, psoriasis, Reiter's syndrome, etc.), which tend to have more central skeletal involvement and asymmetric peripheral articular uptake.

We described a patient (with normal plain radiography) whose areas of arthritic pain exactly matched the regions of increased MDP uptake. Painful upper limbs joints demonstrated intense increased uptake, whereas as painless foot joints showed less increased uptake.

Accurate and early diagnosis of HCVrA is important so as to avoid immunosuppressive therapy, which likely may be ineffective in managing arthritis, exacerbate the viral disease, and delay effective palliative antiviral treatment.^[4,6,7] Because these patients often present with confusing clinical features, there usually is a delay in the diagnosis of HCV infection, leading to a prolonged period of unsuccessful therapeutic trials. Although this arthritis may be difficult to distinguish from other common chronic arthropathies, most notably RA, it is important to consider this arthropathy in the differential diagnosis of every newly presenting oligo- or polyarthrititis.^[4] The patient was also tested for some other causes of polyarthrititis; HBV, HIV, and lupus psoriasis at the time of further diagnosis, and the laboratory findings were negative. Because of significant differences in treatment strategies between RA and HCV arthropathy, future research efforts should focus on clarifying diagnostic differences between HCVrA and other arthropathies.^[4,6,7] In larger patient groups with HCVrA and other virus-related arthritis,^[9-12] further studies

are needed both to assess scintigraphic uptake patterns for distinguishing than other arthropathies and to evaluate treatment response.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Rivera J, García-Monforte A, Pineda A, Millán Núñez-Cortés J. Arthritis in patients with chronic hepatitis C virus infection. *J Rheumatol* 1999;26:420-4.
2. Buskila D. Hepatitis C-associated arthritis. *Curr Opin Rheumatol* 2000;12:295-9.
3. Olivieri I, Palazzi C, Padula A. Hepatitis C virus and arthritis. *Rheum Dis Clin North Am* 2003;29:111-22.
4. Rosner I, Rozenbaum M, Toubi E, Kessel A, Naschitz JE, Zuckerman E. The case for hepatitis C arthritis. *Semin Arthritis Rheum* 2004;33:375-87.
5. Sène D, Limal N, Cacoub P. Hepatitis C virus-associated extrahepatic manifestations: A review. *Metab Brain Dis* 2004;19:357-81.
6. Lormeau C, Falgarone G, Roulot D, Boissier MC. Rheumatologic manifestations of chronic hepatitis C infection. *Joint Bone Spine* 2006;73:633-8.
7. Sanzone AM, Bégué RE. Hepatitis C and arthritis: An update. *Infect Dis Clin North Am* 2006;20:877-89, vii.
8. Palazzi C, D'Angelo S, Olivieri I. Hepatitis C virus-related arthritis. *Autoimmun Rev* 2008;8:48-51.
9. Pyrsopoulos NT, Reddy KR. Extrahepatic manifestations of chronic viral hepatitis. *Curr Gastroenterol Rep* 2001;3:71-8.
10. Calabrese LH, Naides SJ. Viral arthritis. *Infect Dis Clin North Am* 2005;19:963-80, x.
11. Baig S, Alamgir M. The extrahepatic manifestations of hepatitis B virus. *J Coll Physicians Surg Pak* 2008;18:451-7.
12. Vassilopoulos D, Calabrese LH. Virally associated arthritis 2008: Clinical, epidemiologic, and pathophysiologic considerations. *Arthritis Res Ther* 2008;10:215.
13. Elgazzar AH, Shehab D. Musculoskeletal system. In: Elgazzar AH, editor. *The Pathophysiologic Basis of Nuclear Medicine*. Berlin, Heidelberg: Springer-Verlag; 2006. p. 132-208.