CURRENT CONCEPTS

Nonrheumatoid Arthritis of the Hand

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Arthropathy of the hand is commonly encountered. Contributing factors such as aging, trauma, and systemic illness all may have a role in the evolution of this pathology. Besides rheumatoid arthritis, other diseases affect the small joints of the hand. A review of nonrheumatoid hand arthropathies is beneficial for clinicians to recognize these problems. *(J Hand Surg Am. 2017;■(■):■−■. Copyright © 2017 by the American Society for Surgery of the Hand. All rights reserved.)*

Key words Nonrheumatoid, middle finger joints, arthritis, joint replacement.

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POPULATION-BASED STUDIES REPORT A prevalence of radiographic degenerative arthropathy in the hand of up to 76%.[1,2] However, the prevalence of symptomatic arthropathy is lower (8% to 17%).[1] Degenerative arthropathy involves other joints in the hand in about 80% of patients.[3] Some arthropathies can indicate an underlying systemic process.

We provide a review of the more common nonrheumatoid arthropathies and their surgical treatment.[a] Topics of discussion include hereditary hemochromatosis (HH), calcium pyrophosphate deposition disease (CPPD), gout, diabetic cheiroarthropathy (DCA) and hepatitis C virus (HCV)-associated arthropathy.

HEREDITARY HEMOCHROMATOSIS

Hereditary hemochromatosis is an inherited disease characterized by progressive iron overload to specific organ systems; it affects one in every 200 to 400 Caucasians. Males seem to be more affected than females.[4] Symptoms of fatigue and arthralgia usually develop in males aged under 30 years and in women after menopause.[4] Patients may develop a progressive brown hue of the skin from iron overload. Involvement of the pancreas may result in insulin-dependent diabetes. Over time, patients can develop cirrhosis and or cardiomyopathy.

There are 4 types of HH based on their gene mutations. Type 1, also known as classic or high iron–related HH, is the most common form with a genetic dysregulation of intestinal cellular iron uptake, which usually presents during the fourth to fifth decade. In type 2 HH or juvenile HH, patients present with severe iron overload before age 30. This form typically involves the cardiovascular system and may cause life-threatening arrhythmias. Type 3 HH leads to iron overload only in homozygous states owing to transferrin receptor deficiency. Finally, in type 4 HH iron overload occurs because of mutations in the transmembrane protein ferroportin.

Diagnostic workup includes serum ferritin levels and transferrin saturation tests. Further testing is needed if ferritin levels are above 200 ng/mL (449 pmol/L) in women or above 300 ng/mL (674 pmol/L) in men or if a transferrin saturation above 45% in women or 50% in men is found. Acute or chronic inflammatory processes, autoimmune diseases, neoplasms, chronic renal insufficiency, hepatopathies, and the metabolic syndrome may lead to elevated

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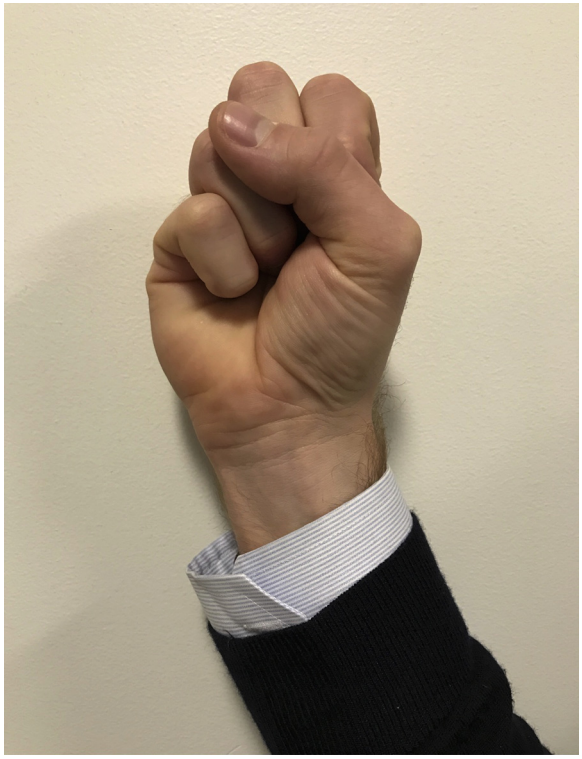

FIGURE 1: Stigmata of limited MCP flexion of the index and middle MCP joints resulting in the "iron salute."

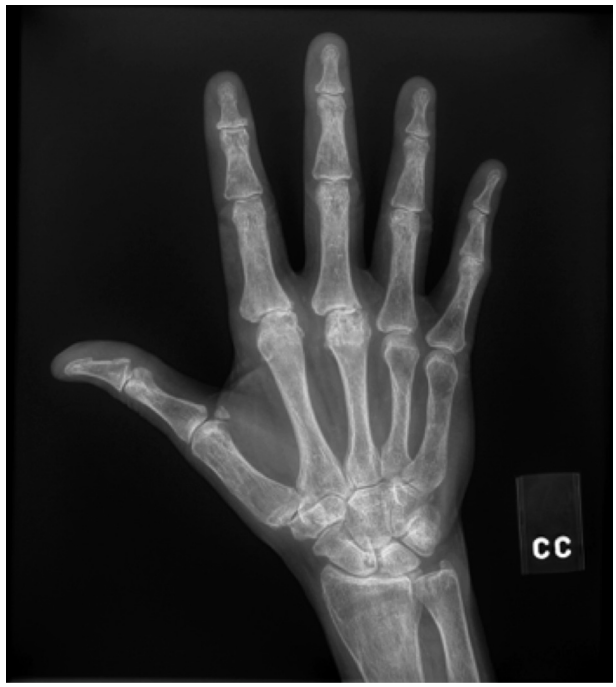

FIGURE 2: X-ray of a 56-year-old woman with MCP pain and limited range of motion who was diagnosed with type 1 HH.

ferritin levels without pathologic iron overload. In these cases, transferrin saturation is generally normal. Serum ferritin levels may not be elevated in early stages of the disease. In addition, hemochromatosis gene testing is readily available that identifies the most common gene mutation.

Schumacher[5] was the first to recognize the association of hemochromatosis with arthritis in 1964. Arthralgia of the metacarpophalangeal (MCP) joints affects 42% of HH patients and is the presenting problem in 28% of patients.[6] Patients with HH may present with a severe arthropathy mimicking osteoarthritis involving the index and/or middle finger MCP joints or larger joints.[7–9] This pattern occurs in 20% to 55% of HH patients with articular problems.[8] Metacarpophalangeal arthropathy associated with HH demonstrates bony enlargement, tenderness to palpation, and limited flexion on physical examination. The limited flexion of the MCP joints may lead to the presence of the "iron salute" (Fig. 1). Up to one-fifth of patients may present with coexisting CPPD.[8]

Hemochromatosis exhibits radiographic findings of MCP eburnation, subchondral cyst formation, chondrocalcinosis, and joint space narrowing. A notable feature of HH arthritis is the development of hook-like osteophytes on the radial side of the metacarpal head (Fig. 2). A magnetic resonance imaging study by Frenzen et al[10] found hooked MCP osteophytes in 32% of patients. Joint erosions, synovitis, and scapholunate dissociation are also common findings in HH.[10]

Treatment for HH consists of systemic iron depletion by phlebotomy or the use of iron chelation therapy. However, improvement of arthropathic changes is reported in only 13.6% to 30% of patients after iron removal therapies.[11] Arthralgia is treated by placement of an orthosis, analgesics, nonsteroidal anti-inflammatory drugs (NSAIDs), or corticosteroid injections. If nonoperative treatments are ineffective, arthroscopy, arthroplasty, and arthrodesis are options for treatment.[12]

In the case of unexplained isolated MCP arthritis involving the index or middle finger, hemochromatosis should be considered. Early recognition in hemochromatosis is valuable because treatment can prevent systemic complications.

GOUT

Gout commonly manifests as a monoarthritis. Onset of pain is usually at night, combined with multiple signs of inflammation such as fever or chills. The erythrocyte sedimentation rate, C-reactive protein, and white blood cell count may be elevated (Table 1).[b] Coincidence with rheumatoid arthritis