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CASE REPORT

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The Reliability of Lab Testing in Diagnosing Psoriatic Arthritis

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Abstract

Psoriatic arthritis is an uncommon, chronic inflammatory disease. Laboratory testing for psoriatic arthritis is generally inconclusive. We present a case of a 26 year-old female with plantar forefoot pain and swelling that was diagnosed as psoriatic arthritis by both a podiatric physician and rheumatologist without the benefit of definitive laboratory results or skin changes. One must maintain a high index of suspicion based on the history and physical examination.

Keywords: *Psoriatic arthritis, Erythrocyte sedimentation rate, C-reactive protein, HLA-B27, Rheumatoid factor, ANA, Arthritis mutilans*

Introduction

At least 5% of patients with psoriasis will develop psoriatic arthritis [1]. However, not all patients with psoriatic arthritis display the typical dermatological manifestations of psoriasis at the onset of the arthritic complaints. It is important to correctly differentiate psoriatic arthritis from other diseases such as gout, osteoarthritis, rheumatoid arthritis, and other forms of inflammatory arthritis to ensure the best course of treatment [2].

Commonly ordered laboratory tests for psoriatic arthritis include human leukocyte antigen (HLA-B27), anti-nuclear antibodies (ANA), rheumatoid factor (RF), erythrocyte sedimentation rate (ESR), and c-reactive protein (CRP), but these labs are inconclusive. Therefore, patient signs and symptoms are often the only clinical tools that can be utilized to diagnose the condition. Common symptoms include psoriasis, dactylitis, and joint pain and stiffness. Radiographs are more helpful to differentiate psoriatic arthritis from other types of inflammatory arthritis. Common distinguishing findings on radiographs include bone erosions, "whiskering" periostitis, "pencil-in-cup" deformity or arthritis mutilans, "ivory phalanx", and acral osteolysis [3].

Chandran et al. [4]conducted a case-control study using 678 cases of psoriatic arthritis and 688 healthy controls. They found that HLA-B27 was present in 20% of psoriatic arthritis cases with an odds ratio of 3.03. A multivariate regression analysis performed by Eder et al. on 712 patients with psoriatic arthritis, 335 with psoriasis alone, and 713 healthy controls showed that HLA-B27 was present in 4.5% of psoriasis cases and 7.2% in healthy controls. The positive predictive value for having psoriatic arthritis was 64% for HLA-B27, 43% for HLA-B38, 42% for HLA-B08, and 35% for HLA-C06 [5]. A study performed by Winchester et al. found that HLA-B27 was significantly more commonly associated with psoriatic arthritis than psoriasis with an odds ratio of 3.77. They also found other HLA alleles that had a stronger correlation to psoriatic arthritis than psoriasis: HLA-B18 (odds ratio of 6.59), HLA-B39 (odds ratio of 2.86), HLA-C02 (odds ratio of 2.35), HLA-B38 (odds ratio of 1.66), and HLA-B04 (odds ratio of 1.81) [6]. Gladman et al. [7]evaluated 220 patients who had inflammatory arthropathy associated with psoriasis. They were evaluated at admission and at 6 month intervals afterward. It was found that 41% of the patients with active arthritis and psoriasis had an elevated ESR > 25 mm/hr. Cervini et al. [8]found that abnormal values of ESR were seen in 53.3% of cases of psoriatic arthritis.

Silvy et al. [9]conducted a retrospective study of 91 healthy controls and 232 patients that met CASPAR criteria for psoriatic arthritis that had not begun biologic treatment. They found that 132 of 232 (57%) patients with psoriatic arthritis and 28 of 70 (40%) of healthy controls were positive for ANA with indirect immunofluorescence at a dilution of 1:100. With sensitivity at 58% and specificity at 64%, the positive predictive value of ANA at a dilution of 1:100 was 62% and the negative predictive value was 60%. A subgroup of subjects was also diluted to 1:160. At this new dilution, 33 of 63 (52%) psoriatic arthritis patients and 21 of 91 (23%) healthy controls were positive for ANA. With a sensitivity of 62% and specificity of 71%, a new positive predictive value of 54% and a new negative predictive value of 77% were found.

A cross-sectional study of 102 outpatients who presented with both suspected arthritis and confirmed psoriasis were evaluated by Bogliolo et al. [10]. They found that RF was present in 19 of 102 (18.6%) patients with psoriatic arthritis. RF is often tested to differentiate psoriatic arthritis from rheumatoid arthritis. The sensitivity of RF in rheumatoid arthritis is 28% and the specificity is 87%. The positive predictive value for rheumatoid arthritis is 24% and the negative predictive value is 89%. The false-positive rate is 65% [11].

Chandran et al. performed logistic regression analysis to evaluate the levels of high-sensitivity CRP (hsCRP) from the data of 52 patients with chronic plaque psoriasis, 26 of whom were also diagnosed with psoriatic arthritis , as well as 26 healthy controls. They found that hsCRP levels are higher in patients with psoriatic arthritis compared to patients with just chronic plaque psoriasis (3.47 mg/l vs. 2.11 mg/l, respectively) with a statistically significant odds ratio of 2.057 [12]. Cervini et al. [8]found that abnormal values of CRP were seen in 53.6% of cases of psoriatic arthritis.

Case Report

A 26 year-old female presented with a two to three month history of plantar forefoot pain with the left much worse than the right, as well as right knee pain. The patient was seen one month earlier for similar, but much less intense, symptoms. The joint problems were not addressed at that time due to the emergent need for an incision and drainage of a paronychia of the left hallux. The patient related that the plantar left forefoot pain had become significantly more severe over the previous ten days, making it difficult to walk. She denied trauma, change in shoes, or activities. She denied any personal history of past or current skin, nail, or mouth lesions. The patient stated that she did not have a family history of rheumatoid arthritis, but her father had some form of arthritic condition.

Clinical examination revealed significant plantar forefoot swelling across the entire ball of her left foot, which was much worse than what she presented with one month earlier. There was sausage digit swelling and mild erythema to the 2nd toe with severe pain and limitation of range of motion at the PIPJ and MPJ. There was increased warmth to the area. There were no visible skin lesions on the lower extremity, elbows, knees, scalp, or umbilicus and no nail dystrophy. There was no evidence of oral mucosal lesions.

X-rays of the left foot (Figures 1-3) revealed soft tissue swelling at the 1st, 2nd and 3rd MPJs and the entire 2nd toe. There was severe joint narrowing to the 1st, 2nd, and 3rd MPJs, and the IPJ of the hallux, “whiskering” at the base of the proximal phalanx of the hallux, and early arthritis mutilans of the 2nd MPJ. There was decreased bone density of the metatarsal heads. There was evidence of a surgical fusion of the 1st metatarsal-medial cuneiform joint with screw and plate fixation (Figure 1). The lab findings included a negative ANA, a negative HLA-B27, an ESR of 63 mm/hr (reference range is 0-20 mm/hr), a CRP of 2.3 mg/dL (normal reference range is 0.0-0.5 mg/dL) and a RF < 20 IU/mL (normal is <25 IU/ml).

Based on the patient’s clinical and X-ray findings, a presumptive diagnosis of psoriatic arthritis was made, and the patient was referred for a rheumatology consult and discharged on a tapering dose of oral methylprednisolone. Two weeks later, a rheumatologist confirmed a diagnosis of psoriatic arthritis, in spite of the paucity of other clinical signs. At this time, the ESR and CRP had returned to normal, liver and kidney function was normal, and she was not pregnant as evidenced by a normal human chorionic gonadotropin (HCG) level. She was started on oral methotrexate. Her right knee was injected with 2 cc of methylprednisolone acetate (40 mg/ml).

Figure 1. *AP x-ray of left foot showing changes consistent with psoriatic arthritis.*

Figure 2. *Medial oblique x-ray of left foot.*

Figure 3. *Lateral x-ray of left foot.*

Discussion

Although 80% of patients presenting with psoriatic arthritis symptoms also have nail or skin changes [1], this case showed symptoms of psoriatic arthritis without signs of psoriasis. Whether skin signs are present or not, practitioners routinely order

laboratory tests to aid in diagnosis. Lab values such as rheumatoid factor, ANA, HLA-B27, CRP, and ESR are the most commonly evaluated. However, none of these blood tests are highly specific or sensitive for psoriatic arthritis [4-12]. It was the radiological changes in our patient that suggested psoriatic arthritis.

Serologic profiles of both psoriatic arthritis and rheumatoid arthritis can appear similar [13]. However, RF is much more likely to be negative in a patient with psoriatic arthritis [10,11]. Although a correlation exists between the presence of HLA-B27 and psoriatic arthritis, it is only positive in 20% of cases [4]and has a positive predictive value of 64% [5]. CRP is often more elevated in patients with psoriatic arthritis compared to psoriasis alone [12], but is still not specific. ANA titres are similar in psoriatic arthritis and healthy controls [9]. Although elevations of ESR and CRP are the most characteristic lab findings in psoriatic arthritis, studies have shown that normal levels of ESR and CRP can be seen in approximately half of patients diagnosed with psoriatic arthritis [7,8]. However, the ESR and CRP levels can track the disease activity and provide guidance to aid in treatment methods and prognosis [14].

Therefore, we conclude that lab values provide little guidance in establishing a diagnosis of psoriatic arthritis. However, ESR and CRP should be considered, as their elevations are the most common abnormalities that are detected. Psoriatic arthritis diagnosis should rely almost exclusively on clinical suspicion and radiographic imaging.

References

1. http://reference.medscape.com/viewarticle/835807
2. https://www.psoriasis.org/about-psoriatic-arthritis
3. Christman RA. "Joint Disease," in Foot and Ankle Radiology. Wolters Kluwer, Philadelphia, 2015; pp: 367-370.
4. Chandran V, Bull SB, Pellett FJ, et al. Human leukocyte antigen alleles and susceptibility to psoriatic arthritis. Hum *Immunol*. 2013; 74: 1333.
5. Eder L, Chandran V, Pellet F, et al. Human leukocyte antigen risk alleles for psoriatic arthritis among patients with psoriasis. *Ann Rheum Dis.* 2012; 71:50.
6. Winchester R, Minevich G, Steshenko V, et al. HLA associations reveal a genetic heterogeneity in psoriatic arthritis and in the psoriasis phenotype. *Arthritis Rheum.*2012; 64:1134.
7. Gladman DD, Shuckett R, Russell ML, et al. Psoriatic arthritis (PSA) – an analysis of 220 patients. *Q J Med.*1987; 62:127.
8. Cervini C, Leardini G, Mathieu A, et al. Psoriatic arthritis: epidemiological and clinical aspects in a cohort of 1.306 Italian patients. *Reumatismo.* 2005; 57:283.
9. Silvy F, Bertin D, Bardin N, et al. Antinuclear antibodies in parents with psoriatic arthritis treated or not with biologics. *PLoSOne.* 2015; 10: e0134218.
10. Bogliolo L, Alpini C, Caporali R, et al. Antibodies to cyclic citrullinated peptides in psoriatic arthritis. *J Rheumatol.* 2005; 32: 551.
11. Shmerling RH, Delbanco TL. How useful is the rheumatoid factor?: An analysis of sensitivity, specificity, and predictive value. *Arch Intern Med.* 1993; 152:2417, 1993.
12. Chandran V, Cook RJ, Edwin J, et al. Soluble biomarkers differentiate patients with psoriatic arthritis from those with psoriasis without arthritis. *Rheumatology (Oxford).* 2010; 49:1399.
13. Venables PJW, Maini RN. Diagnosis and differential diagnosis of rheumatoid arthritis. In: UpToDate, O-Dell JR, Romain PL (Eds), Up To Date, Waltham, MA.
14. Gladman DD, Farewell VT, Wong K, et al. Mortality studies in psoriatic arthritis: Results from a single outpatient center. II. Prognostic indicators for death. *Arthritis Rheum.*1998; 41:1103.

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