Educational Forum

Ultrasonography Greatly Improves the Ability of Clinicians to Diagnose Psoriatic Arthritis



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Approximately 7%-42% of patients with psoriasis, a chronic autoimmune skin condition, suffer from a complication known as psoriatic arthritis.^[1] The large deviation in the reported prevalence of psoriatic arthritis is largely due to the difference in diagnostic methodology used by clinicians. Conventionally, arthritis has been diagnosed using a physical examination, which is limited by the practitioner's sense of touch. The physical examination has low sensitivity and often underestimates the prevalence of arthritis.^[2] Currently, the diagnosis of psoriatic arthritis is primarily made using the ClASsification criteria for Psoriatic ARthritis (CASPAR) criteria. The CASPAR criteria establish the diagnosis of psoriatic arthritis based on the presence of inflammatory articular disease (synovitis, enthesitis, or spondylitis) and a score of at least three points assessed in the following five items: psoriasis (up to 2 points), nail abnormalities (1 point), dactylitis (1 point), negative rheumatoid factor (1 point), and juxta-articular new bone formation on radiographic film (1 point).^[3] The key to whether patients with psoriasis can be diagnosed with psoriatic arthritis at an early stage is the ability of the clinician to discover the presence of arthritis. Breakthroughs in the technology used to support clinicians in the early diagnosis of arthritis are needed. In 2011, Naredo et al. used ultrasound to study patients with psoriasis without joint symptoms and discovered that 50.7% of patients demonstrated ultrasonographic synovitis, whereas 62.5% of patients demonstrated ultrasonographic enthesitis. This suggests that ultrasound is a more sensitive diagnostic method than physical examination for the detection of synovitis and enthesitis at an early stage.^[4]

In February 2016, rheumatologists and dermatologists at Taichung Veterans General Hospital (TCVGH) collaborated to form the TCVGH Interdisciplinary Care Team for Psoriasis and Psoriatic Arthritis and used a 52-joint ultrasound for early detection of synovitis and hence aided in early diagnosis of psoriatic arthritis. This study was approved by the

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Figure 1: Ultrasonography of the right 1st metatarsophalangeal joint in a patient with psoriatic arthritis (long-axis dorsal view). S: Hypertrophied synovium, T: Extensor hallucis tendon, E: Swollen enthesis of the extensor hallucis tendon, MT: Metatarsal head, PP: Proximal phalanx

Ethics Committee of Clinical Research, Taichung Veterans General Hospital (Protocol No: CE16031A and CE16265B. Date: 2016/2/1). Written informed consent was obtained from each patient in accordance with the Declaration of Helsinki. Along with appropriate treatment, joint function would be preserved along with an improved prognosis. Ultrasound was performed on the following joints: bilateral glenohumeral, acromioclavicular, sternoclavicular, elbow, wrist, metacarpophalangeal, proximal interphalangeal, distal interphalangeal, knee, ankle, and metatarsophalangeal joints. Synovitis presented as a hypertrophied hypoechoic area within the joint capsule with or without Doppler signals. Synovial hypertrophy was scored using grayscale (GS; scale 0-3), whereas synovial vascularity was scored using power Doppler (scale 0-3).^[5] The entheseal part of joint capsules and tendons could also be involved and present as entheseal hypertrophy with a decreased echogenicity [Figure 1].

Our study participants included 111 patients diagnosed with psoriasis (no diagnosed arthritis before enrollment) with a

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male-to-female ratio of 1.6 and an average age of 49 years. The primary endpoint was to clarify the diagnostic ability of the "76-joint physical examination by rheumatologist" and the "52-joint ultrasound." A patient's diagnosis to psoriatic arthritis would be revised if on physical examination, a swollen joint count ≥ 1 or the 52-joint ultrasound revealed at least one joint with a GS score ≥ 2 and fulfilled the CASPAR criteria. Both physical examination and 52-joint ultrasound were performed on the 1st day of enrollment. On physical examination, only 15 patients were identified as having at least one swollen joint, a diagnostic rate of 13.5%. The 52-joint ultrasound demonstrated that 58 patients had at least one joint with GS score ≥ 2 , a diagnostic rate of 52.3%. The diagnostic rates of both examination methods were significantly different (P < 0.001).

Based on the current results and the report by Naredo *et al.*, patients with psoriasis, but without joint symptoms or history of arthritis, have a >50% chance of having occult arthritis. Ultrasound examination allows early detection of arthritis, which may prevent patients from disability. We recommend the use of joint ultrasound in daily care for patients with psoriasis or psoriatic arthritis.

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Conflicts of interest

There are no conflicts of interest.

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