



ORIGINAL ARTICLE

Patients with Inflammatory Bowel Disease have Higher Sonographic Enthesitis Scores than Normal Individuals: Pilot Study in Taiwan



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Background: If a patient has inflammatory bowel disease (IBD) and enthesitis, he/she can be classified as having peripheral spondyloarthritis according to criteria set by the Assessment of Spondyloarthritis International Society. In Taiwan, IBD patients visiting outpatient clinics can present without joint symptoms, so the prevalence of these musculoskeletal manifestations may be underestimated. We conducted this study to evaluate enthesitis by ultrasonography (US) in IBD patients, and compared these data with healthy controls (HCs).

Materials and methods: Fourteen IBD patients and 14 HCs underwent independent clinical and ultrasonographic examination of both legs at five enthesial sites. The Glasgow Ultrasound Enthesitis Scoring System (GUESS) was used to assess the degree of enthesitis in the two groups. The total score of enthesitis was calculated on the basis of US findings. All US examinations were undertaken by an experienced rheumatologist blinded to clinical and laboratory findings.

Results: Two hundred and eighty entheses in 14 patients and 14 HCs were examined by US, which revealed 42/140 (30%) and 21/140 (15%) abnormal enthesial sites in patients and controls, respectively. The GUESS score was significantly higher in IBD patients than in HCs ($p < 0.05$). No significant correlation was noted between the US score of enthesitis and serum level of C-reactive protein.

Conflicts of interest: None.

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Conclusion: These data suggest that US is more sensitive than radiography and clinical assessment for the detection of enthesal abnormalities.

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Introduction

Inflammatory bowel disease (IBD) is a chronic inflammatory disease of the gastrointestinal tract. There are two main types of IBD: Crohn's disease (CD) and ulcerative colitis (UC). CD and UC have been found to have distinct pathological and clinical characteristics, but their pathogenesis remains poorly understood. UC is a chronic condition characterized by relapsing and remitting episodes of inflammation limited to the mucosal layer of the colon. CD is characterized by transmural inflammation and skip lesions.

The incidence of IBD has been reported to change according to geographic differences and over time [1,2]. Multiple studies have evaluated the epidemiology of IBD in various geographic regions. In one of the largest studies in the USA, based on 9 million health-insurance claims, the incidence of UC and CD in adults was found to be 238 per 100,000 and 201 per 100,000 population, respectively [3]. Age-standardized incidence rates for IBD, UC, and CD were found to be 3.14 per 100,000, 2.05 per 100,000, and 1.09 per 100,000 persons, respectively, in a developed region of Guangdong province, China [4]. The incidence of IBD in China is similar to that reported for Japan and Hong Kong, but lower than that in South Korea and Western countries [4]. The incidence of IBD in Taiwan is 5.6 per 100,000 persons according to the National Health Insurance Research Database [5].

The presentations of IBD are not confined to the bowel. Extraintestinal manifestations are observed frequently, including arthritis, eye involvement, skin disorders, and pulmonary involvement. However, arthritis is the most common extraintestinal manifestation, and its prevalence is 7–16% [6]. Enthesitis is a sign of joint involvement. It manifests as pain and swelling at the site of attachment of the tendon to the bone, and the lower limbs are involved more frequently. Enthesitis is assessed clinically by eliciting pain at the enthesal site, but this test is neither sensitive nor specific. Thus, more sensitive studies, such as ultrasonography (US) and magnetic resonance imaging, are often used. However, the use of magnetic resonance imaging is limited by its cost, accessibility, and lack of simultaneous evaluation of multiple sites. If a patient has IBD and enthesitis, he/she can be classified as having peripheral spondyloarthritis (SpA) according to criteria set by the Assessment of Spondyloarthritis International Society. The assessment and treatment of these patients may be different if they are classified as having peripheral SpA.

Enthesitis is a well-documented phenomenon in IBD patients. The prevalence of enthesitis of patients with IBD has been reported to be 5–10% [7,8]. In Taiwan, patients with IBD presenting to the outpatient departments seldom complain of joint symptoms. Thus, these musculoskeletal manifestations could be ignored or their prevalence

underestimated by history-taking and clinical assessment alone.

Several methods have been introduced to evaluate the degree of enthesitis. Balint et al [9] have proposed that US is useful to evaluate enthesitis, and have recommended it as a more sensitive method to detect subclinical enthesopathy. Further studies have also demonstrated good intra- and inter-observer reliability and correlation with radiological changes [10–14]. Data on the reference values of normal individuals in Taiwan are lacking. Hence, we sought to evaluate enthesitis in patients with IBD using US, and to collect native ultrasonographic data on entheses in a normal population in Taiwan.

Materials and methods

Ethics approval of the study protocol

Written informed consent was obtained from each patient prior to inclusion in the study. The study protocol was approved by the Research Ethics Committee of the National Taiwan University Hospital (Taipei, Taiwan).

Study design

This was a prospective study blinded to the US operator and the physician assessing the patient.

Patients

Eighteen patients referred from the Gastrointestinal Clinic with a definite diagnosis of IBD (11 UC and 7 CD) were enrolled [15]. Four patients were excluded because they declined the US examination for personal reasons.

The study was conducted on 14 patients with IBD (8 UC and 6 CD) and 14 healthy volunteers recruited from March 2012 to February 2013. Exclusion criteria were: age <20 years; body mass index (BMI) >30 kg/m²; history of severe trauma to the entheses, surgery of the knee and/or ankle, or chronic forms of arthritis (e.g., rheumatoid, gouty, or psoriatic arthritis).

US assessment

We used a portable US machine (LOGIQ e; GE Healthcare, Piscataway, NJ, USA) equipped with multi-frequency linear array transducers (5–13 MHz). B-mode ultrasonography and power Doppler ultrasonography (PDUS) were used. PDUS settings were standardized with a pulse-repetition frequency of 500 Hz and a color mode frequency of 9.1–11.1 MHz. PD was considered positive within the tendon 2 mm proximal to the bony insertion and not at the body of the tendon [9]. We undertook ultrasonographic

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