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Case Report

Use of the painDETECT questionnaire to differentiate the nature of hip pain associated with a labrum tear



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ABSTRACT

The nature of pain associated with a labrum tear of the hip joint can vary widely among patients and does not always correlate with findings from diagnostic imaging. Identifying the components of the pain (nociceptive, neuropathic, or mixed pattern) is important to direct treatment. This report aimed to describe the use of the painDETECT questionnaire as a screening tool in order to classify the nature of the pain in three patients who presented with pain that was atypical for a labrum tear. The painDETECT questionnaire was an effective tool to identify appropriate pain management strategies in each case.

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Introduction

Labrum tears are increasingly recognized as a major cause of hip pain stemming from the nerve endings in the labrum itself.¹ Moreover, since the labrum contributes to the stability of the hip joint by providing a suctioning and sealing effect, labrum tears can result in hip joint instability, which is a risk factor of osteoarthritis.^{2,3} Although good clinical outcomes have been reported following arthroscopic repair of a labrum tear,^{4,5} the nature and extent of pain associated with a labrum tear can vary widely among patients and do not always correlate with findings from diagnostic imaging, which makes diagnosis and treatment difficult.

Clinically, pain is classified as nociceptive, neuropathic, or mixed pattern, and the resulting treatment varies according to the type of pain.⁶ Pain resulting from hip joint disorders, such as a labrum tear, is generally considered to be nociceptive in nature.^{7,8} However, non-steroidal anti-inflammatory drugs (NSAIDs), which are commonly used for the management of nociceptive pain, are not always effective for pain treatment in patients with a labrum tear of

the hip joint.⁹ The lack of effectiveness from NSAIDs usage may be explained by more recent findings demonstrating that neuropathic pain is a component of the pain that is associated with joint disorders, including the hip joint.^{7,8} Since surgical treatment and drug therapy for nociceptive pain are different than for neuropathic pain, differentiating between these two types of pain in patients with labrum tears of the hip is an important clinical issue.

The painDETECT questionnaire, shown in Table 1, is used in practice as a screening tool to distinguish neuropathic pain.¹⁰ The painDETECT questionnaire evaluates the presence and severity of seven qualitative characteristics of pain: burning sensation, hyperesthesia, allodynia, shock-like, thermal, numbness, and tenderness. The screening tool also takes into account the progression and radiation of pain. Based on the distribution of self-reported scores, a patient's pain being contributed to neuropathic factors can be classified as unlikely (identified as nociceptive), likely (identified as neuropathic), or ambiguous (indicating that pain type is unclear and is identified as having a mixed pattern). Our basic strategy as conservative treatments for labrum tear are mainly physiotherapy, intra-articular injection, and medication for nociceptive pain (e.g. NSAIDs). In the patients who are resistant to

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Table 1
The painDETECT questionnaire.

Item	Score
<i>Gradation of pain^a</i>	
Q1: Do you suffer from a burning sensation (e.g. stinging nettles) in the marked areas?	0–5
Q2: Do you have a tingling or prickling sensation in the area of your pain (like crawling ants or electrical tingling)?	0–5
Q3: Is light touching (clothing, a blanket) in this area painful?	0–5
Q4: Do you have sudden pain attacks in the area of your pain, like electric shocks?	0–5
Q5: Is cold or heat (bath water) in this area occasionally painful?	0–5
Q6: Do you suffer from a sensation of numbness in the areas that you marked?	0–5
Q7: Does slight pressure in this area, e.g. with a finger, trigger pain?	0–5
<i>Pain course pattern</i>	
Please select the description that best describes the course of your pain:	
Persistent pain with slight fluctuations	0
Persistent pain with pain attacks	-1
Pain attacks without pain between them	+1
Pain attacks with pain between them	+1
<i>Radiating pain</i>	
Does your pain radiate to other regions of your body? Yes/No	+2/0

Total score

0–12: A neuropathic pain component is unlikely.

13–18: Result is ambiguous; however, a neuropathic pain component can be present.

19–38: A neuropathic pain component is likely.

^a For each question: never, 0; hardly noticed, 1; slightly, 2; moderately, 3; strongly, 4; very strongly, 5.

conservative treatments for at least three months, we consider the arthroscopic surgery. However, in patients identified as having neuropathic pain based on the results of the painDETECT questionnaire, we initially prescribe the medicine for neuropathic pain (e.g. pregabalin).

Our aim in this study was to describe the use of the painDETECT questionnaire to identify the component of pain in three patients with labrum tears of the hip who presented with atypical pain. The three patients provided written informed consent for the publication of their case reports, including accompanying images.

Case presentation

Case 1

A 54-year-old woman complained of severe bilateral hip pain and difficulty walking. The pain in both of her hips began in her twenties, and the pain intensity increased in relation to the intensity of the physical work she performed. On the day prior to her admission to our hospital, severe pain suddenly developed in both of her hips, making it difficult for her to walk. She initially visited her local emergency department for consultation. Unable to identify the cause of this pain, the attending emergency physician referred her to our hospital for further examination and treatment.

The patient was a personal care worker. Her relevant medical history included depression and angina pectoris. With regard to her hip pain, she reported that the pain was present both at rest and during walking, with an intensity of 90 out of 100 mm on the visual analogue scale (VAS). Although her range of hip motion was within normal limits (WNL) bilaterally, she complained of pain during movement. She also reported a feeling of “instability” in both hips. No evidence of osteoarthritis or acetabular dysplasia was evident on plain radiographs; however, a small labral calcification was visible near the edge of the roof of the right acetabulum (Fig. 1).

Due to the insidious onset of symptoms and the atypical pattern and severity of the presenting pain, we used the painDETECT questionnaire to evaluate the nature of pain. The patient had a score of 34 on the questionnaire, which confirmed neuropathic pain, and we therefore prescribed pregabalin at a dosage of 150 mg/d. Her pain resolved within 2 weeks – the VAS score decreased from 90 mm to 0 and good pain control was maintained thereafter.

Case 2

A 48-year-old woman was referred to our department for examination and treatment of severe bilateral hip pain. The pain in her right hip had developed insidiously over the past 4 years. Conversely, the pain in her left hip began 1 year prior to her referral and was present while she was sitting in her car. She initially sought care at her local hospital, where the physician diagnosed her with acetabular dysplasia (defined as a measured lateral centre-edge angle < 20° on plain hip radiographs). As a result, the patient underwent physical therapy for 6 months. She was subsequently referred to our hospital as her symptoms did not improve.

The patient was a housewife with a medical history of anxiety and neurosis. With regard to her hip pain, she reported pain both at rest and during walking with a VAS pain intensity score of 80 out of 100 mm. Although the range of motion of her hips was WNL, she reported pain with movement. Repeat plain radiographs confirmed the previous diagnosis of acetabular dysplasia (Fig. 2-a). Magnetic resonance imaging (MRI) revealed a labrum tear in her right hip, located in the anterolateral part of the acetabulum (Fig. 2-b). Considering the severity of the pain reported and its resistance to conservative treatment, we evaluated the nature of her pain using the painDETECT questionnaire. The patient had a score of 2 on the questionnaire, which was indicative of nociceptive pain, and she was treated with an intra-articular injection of 10 mL of 1% lidocaine with 3.3 mg of dexamethasone. Subsequent to the injection, her pain was controlled with physical therapy as well as with oral medication (Celecoxib, 200 mg/d) and topical agents. One year after her initial admission, her pain decreased to an intensity of 10 mm from an initial 80 mm.

Case 3

A 38-year-old woman was referred to our hospital for examination and treatment of severe left hip pain, which suddenly developed after snowboarding at 4 months prior to admission. During her initial consultation at a nearby hospital, she was diagnosed with mild acetabular dysplasia by plain hip radiography and was treated using oral NSAIDs; however, her symptoms worsened. She consulted three other hospitals without relief of her hip pain and was finally referred to our department.

The patient was a housewife. Her relevant medical history

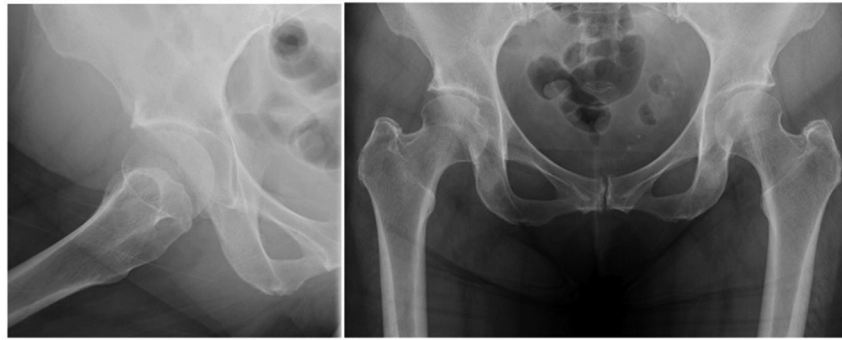


Fig. 1. Plain radiograph for case 1, with an area of visible calcification on the edge of the roof of the right acetabulum.

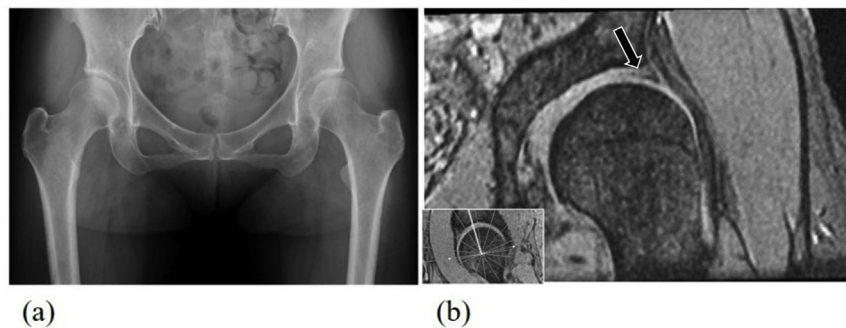


Fig. 2. Plain radiograph and magnetic resonance image (MRI) for case 2, showing (a) acetabular dysplasia on the plain radiograph, and (b) the labrum tear (arrow), in an anterolateral position, on MRI.

included depression and developmental dysplasia of the hip, which was treated using casting during her childhood. She reported left hip pain at rest and during walking, with a VAS pain intensity score of 70 out of 100 mm. Her range of hip motion was WNL, but pain was present during movement. Evidence of mild acetabular dysplasia (lateral centre-edge angle was measured as 23 degrees) was observed on plain radiographs (Fig. 3-a). MRI revealed a labrum tear in the anterolateral part of the acetabulum (Fig. 3-b). Based on these findings, we considered the labrum tear to be the cause of her hip pain, and the patient was treated with an intra-articular injection of 10 mL of 1% lidocaine. However, her pain intensity increased following the injection. Since the situation was atypical, we evaluated the nature of her pain using the painDETECT questionnaire. The patient had a score of 16 and reported a pain characterization of “shooting pain”; therefore, the patient was

identified as having a mixed pattern of pain (nociceptive and neuropathic) and pregabalin at a dosage of 50 mg/d was prescribed to target the neuropathic pain. She was re-evaluated after 1 month using the painDETECT questionnaire. Her score decreased from 16 to 13, which was indicative of a nociceptive component of her pain. Therefore, a second intra-articular injection of 10 mL of 1% lidocaine was administered, resulting in some resolution of her symptoms. She was able to achieve good pain control with physical therapy and pain medication, with a decrease in the VAS pain intensity score from 70 mm at admission to 10 mm at 1 year after admission.

Discussion

Pain is often classified into one of three broad categories:

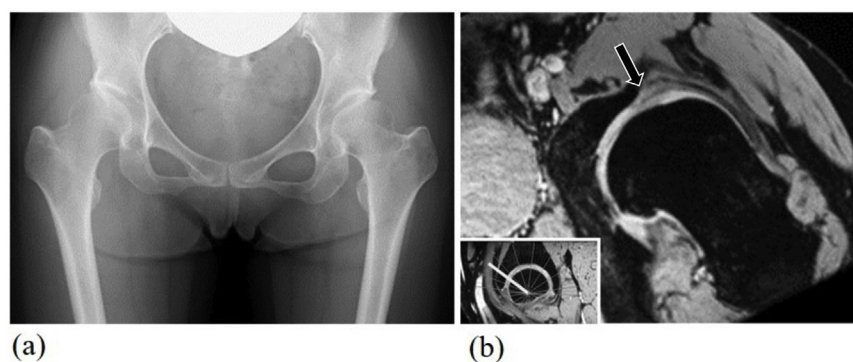


Fig. 3. Plain radiograph and magnetic resonance image (MRI) for case 3, showing (a) acetabular dysplasia on the plain radiograph, and (b) the labrum tear (arrow), in an anterolateral position, on MRI.

nociceptive, neuropathic, or mixed pattern.⁶ Nociceptive pain is caused by the stimulation of peripheral nociceptors, usually due to inflammation or organ damage. Neuropathic pain is defined by the International Pain Society as “pain arising as a direct consequence of a lesion or disease affecting the somatosensory system”.¹¹ Representative conditions of neuropathic pain include shingles, post-herpetic pain, diabetic peripheral neuropathy, carpal tunnel syndrome, and spinal conditions. Neuropathic pain is generally of a high intensity, and is a cause of intractable chronic pain.¹² Clinically, pain emanating from the hip commonly radiates from the femoral, obturator, and sciatic nerves, as well as from the nerve endings in the labrum itself.¹³ The pain associated with most hip disorders is supposed to be nociceptive in nature and responds to treatment using NSAIDs and physical therapy, with surgical treatment (such as arthroscopy and arthroplasty) being indicated in some cases. However, a neuropathic component of pain can be associated with a hip disorder, which requires the use of pregabalin and tricyclic antidepressants.¹⁴ Since the treatment for nociceptive and neuropathic pain is quite different, we considered the differentiation of the pain components to be important for appropriate assessment and treatment of hip pain. As demonstrated by our case series, for patients in whom the onset and symptomatic complaints were atypical for a labrum tear of the hip, and were resistant to previous major treatment, neuropathic pain should be suspected and evaluated. This evaluation would be particularly valuable for patients reporting a high intensity of pain. In these types of cases, surgeons are more likely to select a surgical treatment, particularly if symptoms are resistant to major conservative treatment. Moreover, patients may also be hopeful that such surgical treatment will improve their pain. However, a comprehensive assessment of the pain type is warranted in these cases before proceeding with surgical treatment.

Arthroscopic surgery is a useful procedure for the treatment of labrum tears of the hip. This surgery provides a detailed observation of the joint, and is a minimally invasive treatment of synovitis and labrum and cartilage damage. Preoperative cartilage degeneration and remaining joint instability postoperatively were reported to be associated with a risk of poor clinical outcomes for hip arthroscopic surgery.¹⁵ Based on our experience, neuropathic pain may also be considered as an important factor for surgical treatment failure, although this issue has not been previously investigated in the treatment of labrum tears of the hip. Previous reports on surgical management of shoulder disorders identified that preoperative presence of hypersensitivity, and other features of neuropathic pain, are predictive of poor surgical outcomes.¹⁶ In our case series, poor outcomes from surgical treatment would have been anticipated for cases 1 and 3 because the pain was identified as neuropathic. Conversely, case 2's pain was identified as largely nociceptive and surgical treatment was not warranted. Therefore, we suggest that although hip arthroscopic surgery may be effective, it may also lead to overtreatment in cases where conservative treatment can yield good clinical results.

Various screening tools are available to assess the type of pain that patients experience, including, the painDETECT questionnaire, the Self-Administered Leeds Assessment of Neuropathic Symptoms and Signs Pain Scale (S-LANSS), the Neuropathic Pain Score (NPQ), and the Douleur Neuropathique 4 Questionnaire (DN4). The S-LANSS is a quick and easy tool that contains five symptom items and two clinical examination items, with a reported sensitivity and specificity of 85% and 80%, respectively, compared to clinical diagnosis.¹⁷ The NPQ consists of 10 items related to the sensation of pain and two items related to a patient's effect. The NPQ has a sensitivity and specificity of 66% and 74%, respectively, compared to clinical diagnosis.¹⁸ The DN4 consists of seven items related to symptoms and three related to clinical examination, with a reported

sensitivity and specificity of 83% and 90%, respectively, compared to clinical diagnosis.¹⁹ Bennet et al. reported that the painDETECT questionnaire is a good clinical test for neuropathic pain due to its high sensitivity (85%) and specificity (80%), without requiring a physical examination.²⁰ The painDETECT questionnaire was used in this series because the questionnaire had an official Japanese version and a reported equivalent sensitivity and specificity compared to other questionnaires. Further, this scoring system was established by a detailed validation study and epidemiological survey.²⁰ In our practice, we have found the painDETECT questionnaire to be a useful tool to distinguish the pain type (nociceptive, neuropathic, or mixed pattern), which is necessary to determine the best treatment. A treatment that best accommodates a patient's identified pain type has the potential to increase the effectiveness of the treatment, particularly for a hip labrum tear.

This case series report has several limitations. First, we did not compare the usefulness of evaluating the other pain questionnaires in this report. Although the results from the chosen treatments may have provided clinical evidence supporting the use of painDETECT, we could not confirm the adequacy of this assessment without the use of comparative questionnaires or controls. Additionally, we did not utilize the painDETECT questionnaire in patients who complained of typical pain. Further studies with an adequate sample size are necessary to clarify the components of pain in patients with a hip labrum tear, the effectiveness of pain management, and the usefulness of the screening tools.

Conclusion

We described three cases where the painDETECT questionnaire was useful to direct a treatment strategy in patients with a labrum tear of the hip. In patients whose chief complaint was hip pain, the painDETECT questionnaire allowed us to tailor treatment to the specific needs of each patient by identifying the nature of the pain.

Conflicts of interest

The authors have no conflicts relevant to this article.

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