Meralgia Paresthetica
—Report of Cases and Review of The Literature—

Kai-Kuo Lee  Ya-Ming Tsai  Sheau-Chiou Chao  J.Yu-Yun Lee

Meralgia paresthetica (MP) is an entrapment syndrome of the lateral femoral cutaneous nerve of the thigh manifesting as pruritus, paresthesia, pain, numbness, burning, sensory loss or alopecia in the skin of the innervation of the nerve. MP is associated with various disorders; however, the etiology often remains unknown. MP is not rare and can be easily recognized based on the clinical symptoms and signs of paresthesia involving the anterolateral aspect of the thigh. We describe 5 typical cases of MP diagnosed in our department over a 10-year period (1991-2001) and review its etiology, diagnosis and treatment. (Dermatol Sinica 20 : 46-51, 2002)

Key words: Meralgia paresthetica, Lateral femoral cutaneous nerve

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Introduction

Meralgia paresthetica (MP) was first described by Hager in 1885. Bernhardt reported it more extensively in 1895, and two weeks later Roth published a paper in which he coined the term MP, from the Greek words meros for thigh and algos for pain. The condition came to be known as the Roth-Bernhardt syndrome. MP is a symptom complex that includes numbness, paresthesia, burning and pain in the anterolateral thigh, which may result from either an entrapment neuropathy or a neuroma of the lateral femoral cutaneous nerve (LFCN). Entrapment usually occurs at the point where the nerve pierces the inguinal ligament while entering the thigh at or near level of the anterior superior iliac spine. MP is often associated with obesity, pregnancy, diabetes mellitus, tight clothing and toxic neuropathy, et al.. It may also appear as a result of trauma to the pelvic bones or scarring in the lateral inguinal region.

The diagnosis of MP is mostly based on clinical symptom and signs.

MP has been discussed primarily in the neurologic and neurosurgical literature; for this reason, many dermatologists may be unfamiliar with it. This condition is essentially benign and must be differentiated from other entities so that simple and effective management options can be suggested. We present our experience of five cases with MP and review the related-English literature briefly.

Case Reports

Five cases of MP were diagnosed in our department over a 10-year period (1991-2001). Their clinical features are summarized in Table 1. There were 4 men and 1 woman who aged between 42 and 72 years. The duration of symptoms ranged from one month to one year, with a mean of 9 months. MP involved the right thigh in 4 patients and the left in one. The

Fig. 1
The area of numbness and paresthesia outlined in Case 1, corresponding to the L2, L3 area of the distribution of the right lateral femoral cutaneous nerve.

Fig. 2
The area of numbness and hypoesthesia in the L2, L3 area of the distribution of the right lateral femoral cutaneous nerve is outlined in Case 2.
symptoms of MP were mainly numbness, paresthesia and hypoesthesia. The other symptoms included pruritus, burning, crawling and tingling. MP was aggravated by standing and walking in one, and was relieved by icing packing and hip flexion in another. The real cause of MP was unknown in all cases. Except for one who died of acute renal failure, the symptoms of MP persisted for 2~10 years, mean 6 years. A typical example of MP (Case 2) is described briefly as follows:

The patient was a 72-year-old man presented with a 1-year history of numbness, hypoesthesia, mild crawling and occasional

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pain in the anterolateral aspect of his right thigh (Fig. 2). He noted that walking and standing would aggravate symptoms of MP. He was in good health and had no history of trauma or systemic disorders. On examination, the patient had a patch of numbness and hypesthesia in the anterolateral aspect of his right thigh corresponding to the distribution of the LFCN. The rest of the examination was unremarkable.

He was referred to the department of neurology. The result of the somatosensory evoked potential in the LFCN of the right thigh was normal. Topical NSAIDs was ineffective. At the time of writing, symptoms of MP has persisted for 10 years.

Discussion

MP is described as a syndrome of dysesthesia or anesthesia in the distribution of the LFCN. Symptoms may be mild and resolve spontaneously or may severely limit patient's daily activity for several years. In our cases, the patients' symptoms were all mild and did not affect patients' daily life. But none had resolved spontaneously.

MP has been reported in all age groups, from childhood through old age; however, the condition usually occurs in middle age. Men are more often affected than women. MP in our small series mainly affected middle and elderly aged men. The incidence of MP was 3 cases in 10000 general clinical patients, while another investigator noted that the diagnosis was made in 6.7 to 35 percent of patients referred for the evaluation of leg discomfort.

The derivation of LFCN is quite variable and may be derived from several different combinations of lumbar nerves, including L2 and L3, L1 and L2, L2 alone, and L3 alone. Classically, the nerve travels under the psoas major muscle, over and across the pelvic floor, and then enters the thigh by going across, through, or under the inguinal ligament. It passes just about 6 cm medial to the anterior superior iliac spine. The nerve pierces the thigh fascia to become subcutaneous. The nerve provides sensory innervation to the anterolateral thigh extending to the knee, as well as to the lateral buttock skin through a separate branch. In our cases, MP involved the anterolateral aspect of thigh in 4 patients and the anterior aspect of thigh in one (Case 5). The derivation of LFCN of Case 5 may be derived from L2 alone.

Numerous situations have been described to be associated with MP. These situations can be classified into the following categories, including injury, prolonged pressure, mass, internal infection, neuropathy, metabolic disorder, and idiopathic. Injury to the LFCN may follow trauma, such as iatrogenic trauma while coring for iliac spine or avulsion fracture of the anterior superior iliac spine. MP can be caused by compression of the LFCN by external causes such as the wearing of seat belts or a mass along its course. The mass may be benign such as uterine leiomyoma, or malignant such as a malignant tumor of the psoas muscle or metastatic tumor. MP could disappear immediately after removal of tumors and decompression of the LFCN. Internal infections such as pelvic inflammatory disease were once thought to be important causes but now are rarely associated with this condition. Metabolic disorders such as diabetes mellitus, alcoholism, lead poisoning and hypothyroidism can cause an isolated neuropathy of the LFCN. While 55% of patients had aggravating factors just prior to development of symptoms, no association factors were found in 45% of patients. In our series, Case 1 had resection of a tonsilar cancer and received radiotherapy, and Case 5 had a history of trauma on the left knee s/p debridement 3 years ago and hyperlipedemia, both of which appeared unrelated to MP. So the real cause was unknown in our cases. MP is usually unilateral; however, 20% of patients present with bilateral complaints. All our cases had unilateral involvement, but there was a predominance on the right thigh except for Case 5 on the left thigh.

The diagnosis of MP is based on the constellation of signs and symptoms affecting the area innervated by the LFCN, and the diagnosis
can be usually made through history and physical examination findings. Symptoms include paresthesia, burning, coldness, lightning pain, deep muscle achiness, tingling, frank anesthesia, numbness or local hair loss in the involved area.\textsuperscript{2,3} Local hypersensitivity to touch, or decreased sensitivity to pain, touch and temperature also have been reported.\textsuperscript{2} Exacerbation of symptoms on walking, standing, or hip extension were noted.\textsuperscript{10} Icing packing and sitting can help to relieve symptoms of MP.\textsuperscript{2} These had been noticed in 2 of our cases. The other 3 cases were no aware of any aggravating or relieving factors.

The clinical diagnosis is supported if there is tenderness to pressure immediately distal to the anterior superior iliac spine.\textsuperscript{11} Occasionally the nerve may be palpable on the affected side in thin patients in whom palpation may cause irritation.\textsuperscript{2} Rapid relief of symptoms with a local anesthetic nerve block at the site where the LFCN passes by the inguinal ligament can confirm the diagnosis.\textsuperscript{2}

Accurate diagnosis is essential prior to any medical intervention. The condition can be differentiated from other neurologic disorders by the characteristic distribution of involvement and the typical exacerbating or attenuating factors. Sensory symptoms and signs of the anterolateral thigh may be due to various disorders, including lumbar disc disease, intrapelvic disease,\textit{et al.},\textsuperscript{12} and in dermatological field, leprosy in particular. When the history and physical examination are nonconfirmatory, electrodiagnostic testing may be effective in establishing the diagnosis.\textsuperscript{2} Somatosensory evoked potentials can also be utilized with segmental or dermatomal techniques. An abnormal latency or a side-to-side decrement greater than 50% is considered abnormal.\textsuperscript{2} Somatosensory evoked potentials have been used successfully by several authors to support a diagnosis of MP if further clarification is need.\textsuperscript{2} Nerve conduction velocity can be used but generally is ineffective because of the difficulty in obtaining sensory potentials for the nerve.\textsuperscript{3} A radiological evaluation consisting of plain films with either computed tomography or magnetic resonance imaging is recommended to rule out such intrapelvic causes of pain.\textsuperscript{2} Skin biopsy is not helpful since it usually reveals ”sections of skin with unremarkable epidermis and dermis",\textsuperscript{13} Two of our patients were evaluated by somatosensory evoked potentials, nerve conduction velocity, F reflex and H reflex without abnormal findings.

The course of MP tends to occur intermittently for several years. Appropriate management consists of relieving symptoms and avoiding iatrogenic injury. There is no needed for excessive work-up or therapy. Idiopathic MP usually improves with nonoperative modalities.\textsuperscript{2} In pregnancy, conservative therapy is indicated because the symptoms generally resolve after the patient has given birth.\textsuperscript{3} Patients may benefit from icing packing, sitting, analgesics, NSAIDs, looser clothing, body weight reduce, and the judicious use of local anesthetics and steroids.\textsuperscript{2} Tricyclic antidepressants, anticonvulsants, and antiarrhythmic agents have also been used.\textsuperscript{2} Puig \textit{et al.} advocated treatment of MP with topical capsaicin for symptomatic relief.\textsuperscript{14} Topical capsaicin has been used in several dermatological and peripheral pain disorders such as diabetic neuropathy, rheumatoid arthritis, pruritic lesions of psoriasis, vulval vestibulitis,\textit{et al.}.\textsuperscript{14} Topical capsaicin administration depletes and prevents the reaccumulation in peripheral sensory neurons of substance P, which is involved in the transmission of pain and possibly itch sensations.\textsuperscript{15}

Williams and Trzil demonstrated relief of symptoms with non-operative care in more than 91% of 277 patients with MP.\textsuperscript{16} Non-operative treatment alone will reduce the severity of most symptoms to an acceptable level. Only when the complaints become intractable and disabling should surgery become an option.\textsuperscript{2} However, there is no consensus as to the best surgical treatment. Ghent advocated excision of the posterior slip of the inguinal ligament to decompress the nerve, or transection of the nerve.\textsuperscript{5} Aldrich and Van den Heever advocated neurolysis with or without transposition and advised against transection.\textsuperscript{17} In our series, the
symptoms were relatively mild and were treated with topical NSAIDs which, however, were of little help to the patients.

In summary, we described 5 typical cases of MP. MP is not rare and can be readily recognized. Symptoms can be usually relieved or lessened by avoidance of precipitating factors combined with non-operative treatments.

References