

Hip and knee pain concomitant with herpes zoster of the saphenous nerve: A unique case report

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Abstract

Background: Herpes zoster is the result of the activation of latent varicella-zoster virus, which multiplies within a sensory ganglion and travels along the nerve to the skin. The classical manifestation is a unilateral dermatomal, vesicular rash. The intercostal herpes zoster is the most described localization. Localization in the saphenous was never described before.

Case report: We report the case of a 65-year-old patient who presented symptoms of herpes zoster in an uncommon and undescribed location corresponding to the territory of the saphenous nerve. The symptomatology was accompanied by hip and knee pain, attributed to the obturator nerve's concomitant participation. The literature has reported a case with motor or adjacent dermatome participation probably caused by the inflammatory reaction in the posterior corn.

Conclusions: The localized eruption, the favourable evolution of hip and knee pain in parallel with the regression of the rash, and the review of the literature conclude with the diagnosis of herpes zoster of the saphenous nerve and suggest the participation of the femoral or the obturator nerve.

Keywords: Herpes zoster; Saphenous nerve; Case report; Segmental zoster paresis; Hip pain

1. Introduction

Herpes zoster (HZ), which is also known as shingles, is the result of the reactivation of latent varicella-zoster virus and occurs more frequently in older adults and immunocompromised individuals [1].

Herpes zoster occurs when latent varicella-zoster virus (VZV) reactivates and multiplies within a sensory ganglion and travels along the sensory nerve to the skin [2]. Pain preceded herpes zoster rash in 84% of patients [2].

The lifetime risk of HZ in the general population ranges from 20–30%, but the risk increases dramatically after 50 years of age, with a lifetime risk of HZ reaching 50% at age 85 years [1].

Classically, reactivation of VZV presents as a unilateral dermatomal rash that is initially maculopapular on an erythematous base and evolves into a vesicular-pustular appearance that begins to crust over after 7–10 days and heals within 2–4 weeks. It can either be limited to a single dermatome or occur over adjacent dermatomes depending on the distribution of the sensory ganglia where reactivation occurs [1].

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2. Case presentation

The reporting of this work follows the SCARE checklist criteria [17], ensuring adherence to guidelines for quality reporting in case series.

The case of a 65-year-old patient who had a history of febrile eruption in childhood, well-balanced diabetes, and was treated with hygienic-dietetic measures, with 7% glycated haemoglobin. A patient who used to practice walking daily had experienced hip and knee pain on the right side that was exacerbated with standing and walking, with recurring anterior thigh cramps. Physical examination did not find awakened pain with rotational mobilization of the hip joint, weakness of the quadriceps, or pain while mobilizing the knee. Radiological imaging did not find a narrowing of the joint line of the hip joint (fig. 2), and the patient was given acetaminophen and NSAID treatment.



Figure 1 A. Vesicular eruption in erythematous base localized in the anteromedial side of the leg, which corresponds to the B. territory of the saphenous territory [15]

The symptoms did not regress with medication; two weeks later, the patient developed a vesicular eruption (Fig.1) on the anteromedial side of the leg. given that the territory concerned was unilateral and limited, the aspect of a vesicular rash in erythematous base, the diagnosis of herpes zoster was evoked. The examination of the oral cavity found pharyngitis, and serology was realized (Fig. 3), which objectivised an elevated rate of IgM against varicella-zoster, synonymous with a recent immune reaction, which confirmed the presence of herpes virus. The treatment was a stop of the NSAID, the continuation of acetaminophen, an antihistaminic and local treatment made of acyclovir with good evolution with progressive disappearance of the vesicles, and the improvement of the hip and knee pain. However, cramps felt transiently during the day for a few moments at a time, and they eventually disappeared after 3 weeks. Two months after the beginning of the symptoms, the patient reported no pain, an improvement in his symptoms, and his return to normal walking practice.



Figure 2 X-ray image of the right hip with no suspicious radiological lesion

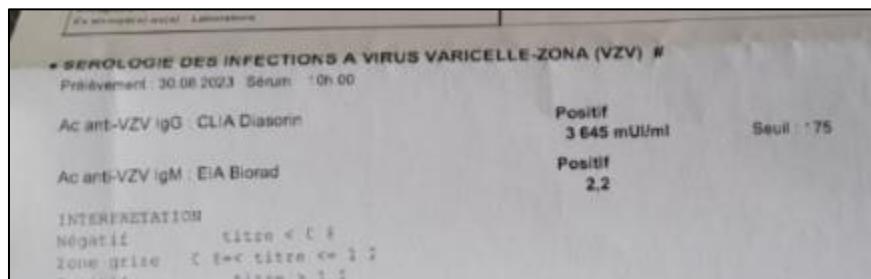


Figure 3 *Varicella zoster* virus serology with an elevated rate of IgM synonym of a recent reactivation of the virus

3. Discussion

Herpes zoster is the common manifestation of Varicella zona virus reactivation. It usually presents as a self-limiting vesicular rash, often accompanied by postherpetic neuralgia [3].

Varicella zoster virus usually causes chickenpox in childhood. During the acute phase of the illness, the virus travels anterogradely through the sensory axons of the peripheral nerves to lie dormant in the cranial nerve nuclei, dorsal root, and autonomic ganglia of the entire neuroaxis [4]. The latent neurotropic VZV in neurons, which initially infects the cells via membrane fusion or endocytosis, is transported retrogradely inside the cell. Its reactivation involves anterograde intra-axonal transport to the synapse. Transsynaptic transport is also reported to be a possible mechanism in brain herpes simplex virus encephalitis [5]. It may also reach these sites via the blood in the viraemic stage of the initial infection. During the latent period, the virus infects both neuronal and satellite neuroglial cells. During viral reactivation, the virus travels to the skin transaxonally through the sensory roots, causing the characteristic vesicular rash within the corresponding dermatome(s) [4].

It may also spread to involve the nerve roots adjacent to the dorsal root ganglia, causing plexitis or neuritis. Motor nerve root involvement has been suggested to cause motor weakness [5], which is probably due to the spreading of inflammation from the dorsal root ganglia to the ventral roots and may be more extensive than the affected dermatomes. The ability of this virus to spread and infect various neuronal cells explains the diversity of its clinical manifestations [4].

Reactivation occurs when VZV can overpower immune controls and spreads through the affected ganglions and nerves to reach the skin and manifest as HZ. It can either be limited to a single dermatome or occur over adjacent dermatomes depending on the distribution of the sensory ganglia where reactivation occurs [6]. In a large observational trial about herpes zoster, pain preceded the rash in 84% of patients and was present during the acute exanthem phase in 89%. Pain preceding or accompanying the dermatomal rash is termed acute pain. In some persons, especially elderly individuals, there is pain in the distribution of the affected sensory nerve [2].

Hip joint innervation is provided by articular branches of the femoral, obturator, and sciatic nerves. The anterior part of the joint is innervated by branches of the femoral and obturator nerves, while branches from the sciatic nerve provide innervation to the posterior part of the joint capsule. [7]

In femoral neuritis, the femoral distribution of pain is quite likely to give rise to difficulty in differentiating from pain of hip or knee joint origin. [8].

The obturator nerve originates from the ventral divisions of the ventral rami of the L2, L3, and L4 spinal nerves. [9].

The femoral nerve is the largest branch of the lumbar plexus, usually arising from the posterior divisions of the ventral rami of L2–L4 femoral neuropathy, and is associated with weakness in hip flexion (iliopsoas) and knee extension (quadriceps femoris) caused by involvement of all anterior thigh muscles except for the tensor fasciae latae. Extrapelvic femoral injuries typically spare the iliopsoas muscle, with denervation changes involving the pectineus, sartorius, and quadriceps femoris. Sensory impairment over the anteromedial thigh and a reduced knee reflex are also observed in obturator neuropathy pain, typically radiating down along the medial thigh [10].

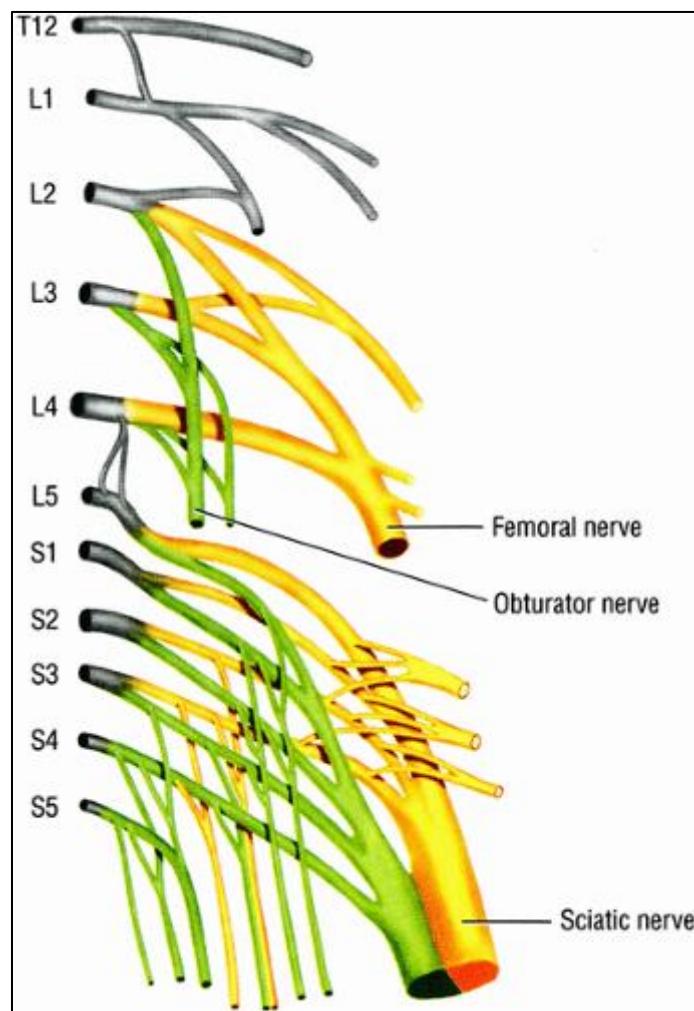


Figure 4 The common origin of the femoral and obturator nerves and the distribution of everyone [16]

The saphenous nerve is a terminal branch of the femoral nerve that is exclusively sensory. Supplying the medial articulation of the knee and cutaneous sensation of the medial aspect of the knee, leg, and ankle. From its origin at the level of the inguinal ligament. The nerve travels close to the femoral artery in the thigh before becoming more superficial to run with the greater saphenous vein [12].

Femoral articular branches (Abs) most frequently supplied the anterior, superolateral, inferolateral, and superomedial quadrants of the hip capsule, with decreasing regularity. Obturator gives four branches. These three ABs pierce the inferomedial region of the anterior capsule, where they anastomose to innervate the superomedial and inferomedial capsule [12].

The clinical symptomatology of our patient with initial pain with a localization in the hip and the knee and the sensation of a cramp in the medial and anterior aspect of the thigh signified the irritation of the femoral nerve. Additionally, after the disappearance of vesicular lesions, there was an amelioration of the hip, making positive imputability of the virus in the genesis of hip and knee pain.

The vesicular eruption was localized in the saphenous nerve. Authors reported motor locations Rhyu et al. [13] reported a case of a patient with an early-stage herpes zoster lumbar radiculitis accompanying motor weakness before the vesicular rash and Patel et al [14] reported segmental zoster paresis focal weakness of the extremity in the myotome that corresponds to dermatomal involvement.

4. Conclusion

herpes zoster of the femoral nerve and its branch the saphenous nerve is atypical and a never described cause of the inferior limb pain (around the hip and knee) and should be considered as a differential diagnostic of knee pain with neurological manifestation as a cramp and weakness and even more when there is a dermatologic manifestation.

Compliance with ethical standards

Acknowledgments

An agreement was obtained from the site musculoskeletal key for the use of the iconography

Disclosure of conflict of interest

The authors declare no conflict of interest.

Statement of ethical approval

This case report is exempt from ethical approval at our institution.

Statement of informed consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

All the authors contributed to the study concept, data analysis, and writing of the paper.

Guarantor

Dr Fouad Lamnaouar is the guarantor for this study.

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