

# SCIATIC NEUROPATHIES: CLINICAL AND ELECTROPHYSIOLOGICAL ASPECTS

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## Objectives

This is a retrospective analysis of 312 consecutive cases of sciatic mononeuropathy. We report: etiologies, relative involvement of the peroneal and tibial divisions and clinical features.

## Materials

Data were obtained from database of Parma Hospital EMG laboratory over the last 12 years. All electrophysiological studies were performed or supervised by the same operator.

## Methods

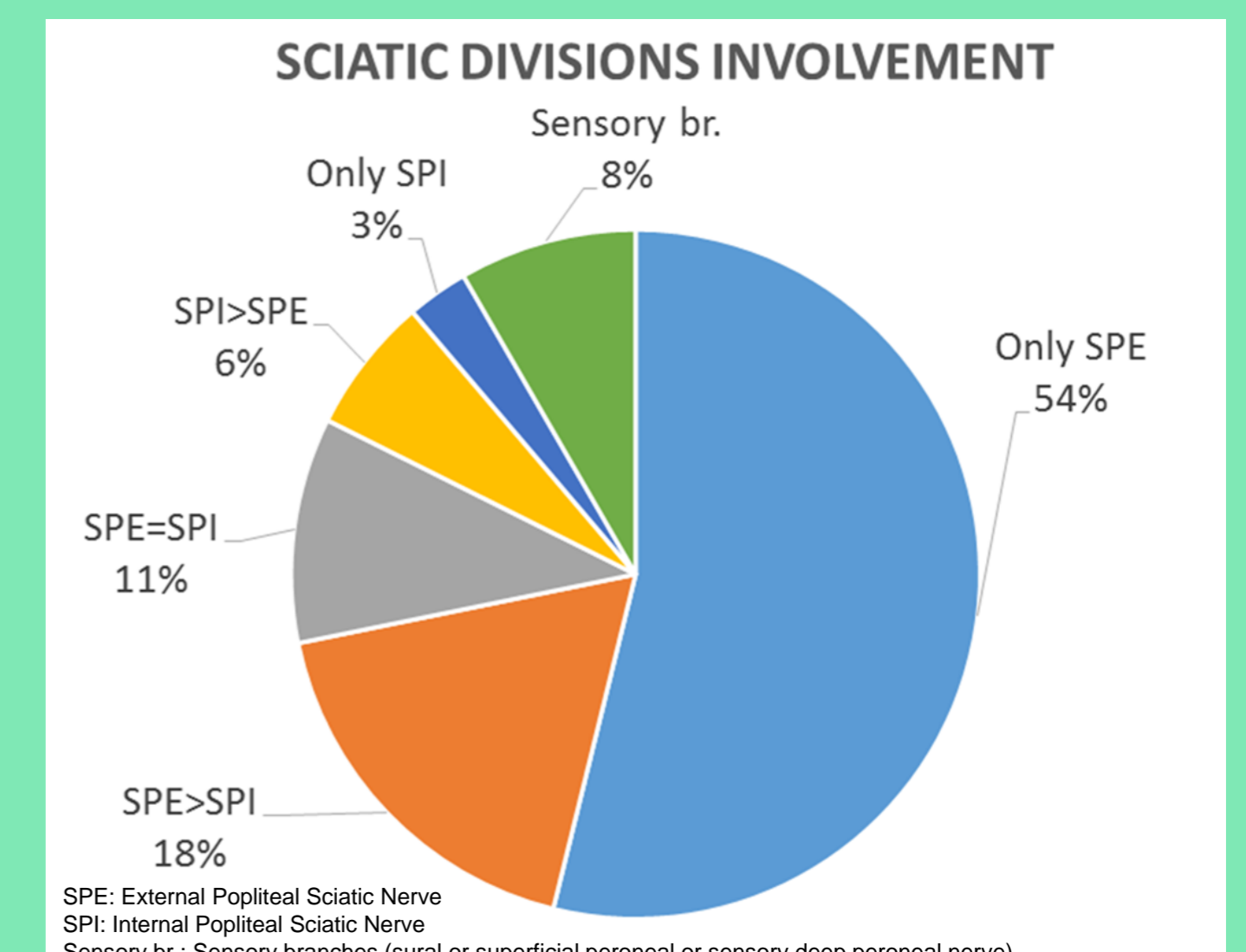
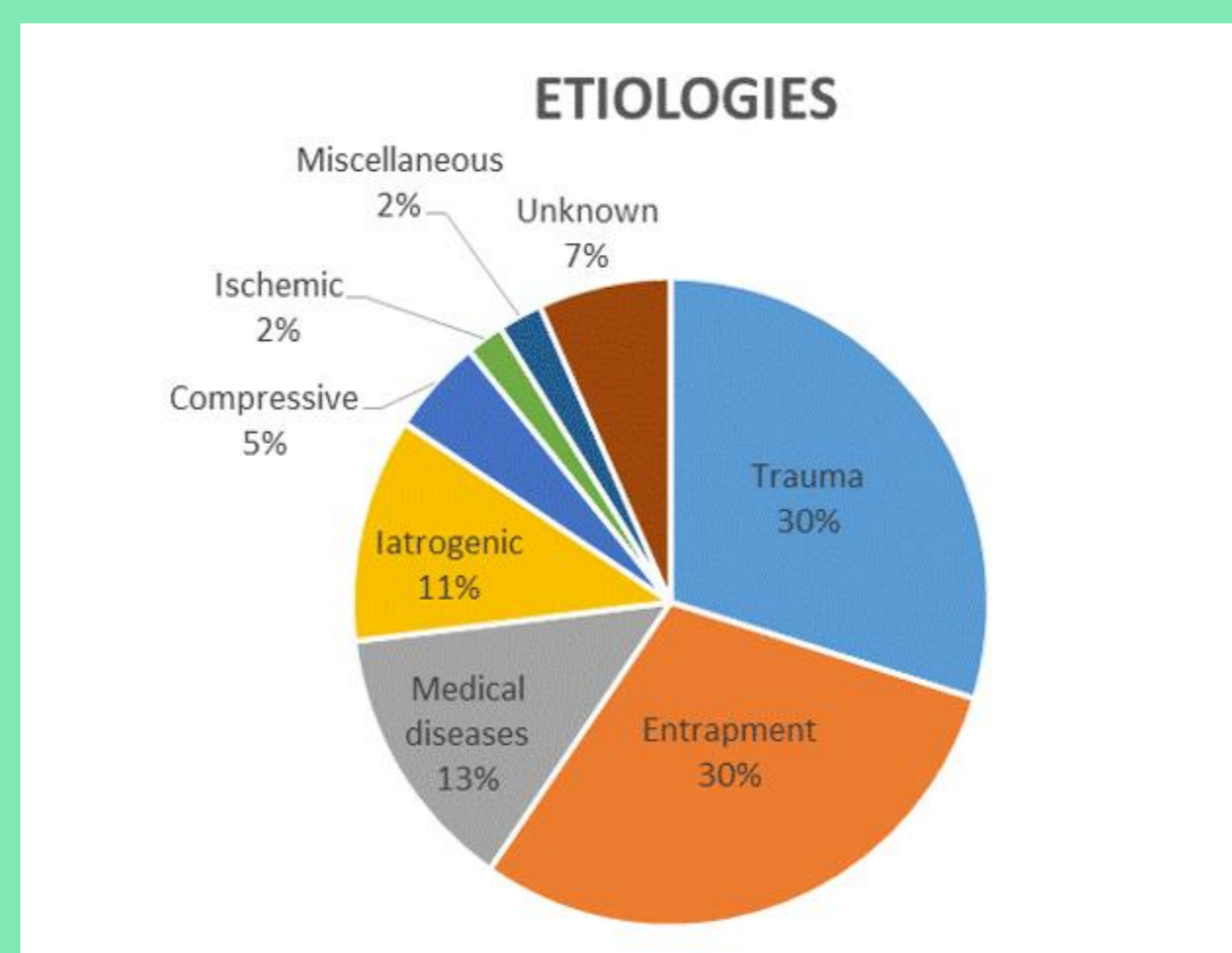
We included patients with diagnosis of sciatic, peroneal, tibial or sciatic sensory branches neuropathies. Patients with polyneuropathy and radiculopathy were included only if electrophysiologic abnormalities were predominant in unilateral sciatic nerve distribution. Nerve conduction studies were performed in 295 patients and needle EMG in 286 patients.

## References

1. Clawson DK, Seddon HJ. The late consequences of sciatic nerve injury. *J Bone Joint Surg Br.* 1960 May;42-B:213-25.
2. Simon NG, Spinner RJ, Kline DG, Kliot M. Advances in the neurological and neurosurgical management of peripheral nerve trauma. *J Neurol Neurosurg Psychiatry.* 2016 Feb;87(2):198-208.
3. Yuen EC, So YT, Olney RK. The electrophysiologic features of sciatic neuropathy in 100 patients. *Muscle Nerve.* 1995 Apr;18(4):414-20.

## Results

The most frequent etiologies were sciatic nerve trauma (30%) consisting mainly in fractures, and peroneal entrapment at the knee (28%). Associated medical diseases (13%) were autoimmune pathologies and malignant cancers without nerve compression. Iatrogenic injuries (11%) occurred mainly with hip arthroplasty. Compression injuries (5%) included extrinsic infiltration by malignancies, popliteal cists, compartment syndromes, popliteal venous thrombosis, multiple hereditary exostosis and neurofibromatosis. Ischemic neuropathies (2%) were caused by lower limb arterial thrombosis. Miscellaneous (2%) include post-herpetic sciatic neuropathies, neurogenic tumours, non-diabetic lumbosacral radiculoplexus neuropathy and local osteomyelitis. In 7% we didn't find any etiology. Independently of etiology, most of patients had greater involvement of the peroneal than the tibial division.



## Discussion

Clawson and Seddon described the first large series of sciatic neuropathies in 1960 [1], when diagnosis was only possible with accurate examination and war injuries were predominant. Later, electrophysiology became the mainstay in the diagnosis of peripheral nerve lesions because it helps to determine the localization, the extent of injuries and also to follow their recovery.

- As reported in literature, we showed that peroneal is more susceptible to injuries than the tibial division, due to his gross and microscopic anatomy.
- Even if tibial division is clinically spared we recommend needle EMG examination of tibial muscles.
- In our case series a lot of etiologies were diagnosed with the help of new imaging instrumental technologies [2], like magnetic resonance neurography, computed axial tomography, bone scintigraphy, arteriography, positron emission tomography, ultrasound and radiography.

## Conclusions

Sciatic neuropathy is a very common mononeuropathy of the lower extremities. According to our research, the last case series present in the literature date back to 1995 [3]. Neurological and EMG examination are fundamental to localize the nerve lesion and guide the choice of successive imaging investigations that can reveal the etiology.