CASE REPORT

Ganglionopathy as the initial manifestation of neoplastic lung disease: a case report

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ABSTRACT

Ganglionopathy is a rare condition defined by an injury to the sensory neurons in the dorsal root ganglion. This disease belongs to a group of peripheral polyneuropathies with an exclusively sensory and axonal pattern and its diagnoses can be made by an electromyoneurographic study. The association between ganglionopathy and other underlying pathologies, such as some types of cancer, autoimmune diseases, and celiac disease is often mentioned in published studies. The purpose of this report was to describe the case of a patient suffering from ganglionopathy including a detailed discussion of the electromyoneurographic study that led the attending physician to a diagnosis of neoplastic lung disease. The conclusion therefore was that it is important for the neurophysiology specialist to keep in mind the possible causes of ganglionopathy and, through this diagnosis, to help the attending physician in making an early and full workup of the patient.

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INTRODUCTION

Ganglionopathy is a rare condition that affects the sensory neurons in the dorsal root ganglion causing mostly sensory alterations that could be accompanied by ataxia and hypo-activity or loss of tendinous reflexes.

This condition is part of a group of peripheral polyneuropathies of an exclusively sensory and axonal nature, diagnosed by an electroneuromyographic study that reveals a multifocal reduction in the amplitude of sensory potentials, but with little or no alterations in the sensory potentials or in the myography.

Chart 1. Motor neuroconduction - no significant alterations

Capture	Stimulus	Lat (ms)	Amp (mV)	Area (Mv X ms)	Vel (m/s)
R Abductor pollicis brevis Median C8, T1	Fist	2.85	5.65	21.9	50.8
	Elbow	6.09	5.73	22.4	
R Abductor hallucis Tibial L4,L5,S1	Ankle	4.5	9.92	23.1	42.5
	Popliteal fossa	14.4	6.94	15.8	
L Abductor hallucis Tibial L4,L5,S1	Ankle	4.15	9.74	24.7	42.2
	Popliteal fossa	14.1	8.08	21.6	
R Ext digitorum brevis Fibular L4, L5, S1	Ankle	3.81	3.6	15.1	
	Fibula head	11.3	3.44	14.7	41.8
	Popliteal fossa	12.3	2.99	12.0	41.3
L Ext digitorum brevis Fibular L4, L5, S1	Ankle	3.9	2.99	12.0	
	Fibula head	11.6	2.53	11.1	40.9
	Popliteal fossa	12.6	2.38	10.5	41.8

Chart 2. Sensory neuroconduction - Signs of axonal loss (reduced amplitude of sensory potential) of the median, ulnar, superficial fibular, and bilateral sural nerve fibers

Stimulus	Capture	Lat (ms)	Amp (uV)	Area
R Median N	III toe	3.6	4.3	2.6
R Ulnar N	V toe	3.25	6.3	3.5
R sup. Fibular N	Ankle	3.4	1.0	1.6
L sup. Fibular N	Ankle	3.95	1.2	0.4
R Sural N	Calf	3.5	1.3	0.2
L Sural N	Calf	3.23	1.2	0.5

Delayed responses - Reflex H bilaterally absent

Chart 3. Myography - Electromyographical study of the lower limbs and lumbosacral paravertebrae normally at rest with normal morphology motor units during recruitment

Capture	Amplitude of MUP	Duration of MUP	Morphology	Pattern
R Vastus medialis Femoral L2-L4	N	N	N	N
L Vastus medialis Femoral L2-L4	N	N	N	N
R Tibialis anterior Fib prof L4, L5, S1	N	N	N	N
L Tibialis anterior Fib prof L4, L5, S1	N	N	N	N
R Fibularis longus Fibular sup L4-S1	N	N	N	N
L Fibularis longus Fibular sup L4-S1	N	N	N	N
R Gastrocnemius Tibial S1,S2	N	N	N	N
L Gastrocnemius Tibial S1,S2	N	N	N	N
R Ext hallux longus Fibular prof L4-S1	N	N	N	N
L Ext hallux longus Fibular prof L4-S1	N	N	N	N
R Ext digitorum brevis Fibular prof L4-S1	N	N	N	N
L Ext digitorum brevis Fibular prof L4-S1	N	N	N	N
R LSPV	N	N	N	N
L LSPV	N	N	N	N

The link between ganglionopathy and other conditions such as neoplasias, autoimmune diseases, celiac disease, and others is not uncommon. The following is a description of one case of ganglionopathy, diagnosed via electroneuromyography, which led to a further investigation resulting in the diagnosis of pulmonary neoplasia.

Clinical case presentation

Identification: F.A.S., male gender, 49 years of age. Complaint and duration: Diffused pain in lower limbs for two years. Prior history and current ailment: Diffused pain in the lower limbs accompanied by paresthesia in lower and upper limbs. Reports no other associated symptoms. Personal background: Dyslipidemia, smoked for 30 years. Medications in use: simvastatin. Physical examination: Muscular trophism preserved with grade 4 strength in lower limbs, in addition to symmetrical hypoactive reflexes. Positive Romberg's test.

Electroneuromyography

Conclusion - The electrophysiological situation is compatible with predominantly axonal sensory polyneuropathy (ganglionopathy), diffusely affecting the lower limbs to a moderate degree according to the current study.

After the results of the electroneuromyographic study, the attending physician proceeded with an additional investigation and arrived at a diagnosis of pulmonary neoplasia, thereby classifying the ganglionopathy as a secondary (paraneoplastic) characteristic.

DISCUSSION

When evaluating peripheral polyneuropathies, it is important to consider the following aspects: 1 - Types of nerve fibers involved: motor, sensory, autonomic; 2 - Distribution of the symptomology: anatomical aspects; 3 - Time of evolution: the way it began; 4 - Form of evolution; 5 - Neurophysiological evaluation: electroneuromyography, etc.; 6 - Family history; 7 - Related symptoms; 8 - Related pathologies; 9 - Exposure to medications and toxic substances; 10 - Treatments undergone and their responses; 11 - Supplementary investigations.[1]

After this analysis, we can then classify the polyneuropathy according to its electrophysiological pattern as: 1 - Sensory-motor polyneuropathy with uniform demyelination; 2 - Predominantly a motor-fiber polyneuropathy with segmented demyelination; 3 - Predominantly a motor-fiber polyneuropathy with axonal loss; 4 - Sensory polyneuropathy with

axonal loss; 5 - Sensory-motor polyneuropathy with axonal loss; and 6 - Sensory-motor polyneuropathy with mixed losses (myelinic--axonal).[2]

Ganglionopathy belongs to a group of sensory neuronopathies with axonal losses, according to the above-mentioned classification.

Its signs and symptoms include pain manifestations, sensory alterations (such as paresthesia), ataxia of the sensory type, and diminution of the tendinous reflexes.[3,4,5] The above-described case has all of these manifestations to a certain degree, thus corroborating the diagnostic hypothesis of the electroneuromyographic examination.

A differential diagnosis must be made between ganglionopathy and the other types of peripheral polyneuropathy and, to this end, electroneuromyography is of vital importance. As we can observe in the case reported, the patient had clinical symptoms compatible with axonal sensory loss.

Among the causes most often cited were: paraneoplastic syndrome (Lung tumor - small-cells/neuroendocrine), Sjögren's Syndrome, mitochondrial cytopathy, Hereditary, Celiac Disease, Medications (pyridoxine, chemotherapies), and Idiopathy.[6,7,8,9]

In the case described, ganglionopathy was the first manifestation of a pulmonary neoplasia, and helped in the diagnosis. It is known in the literature that polyneuropathy can precede a neoplasia diagnosis by as much as 4.5 months.[4]

CONCLUSION

It is important that the neurophysiologist keeps in mind the possible causes of ganglionopathy and know enough to alert the attending physician so that a complete workup can be made. Many times the first manifestation of the conditions listed above is ganglionopathy, therefore electroneuromyographic findings can furnish valuable clues for an etiological diagnosis and accelerate this process.

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