



CASE REPORT

Painful ischemic monomelic neuropathy: An unusual complication in a lung cancer patient

Ağrılı iskemik monomelik nöropati: Akciğer kanseri hastasında alışılmadık bir komplikasyon

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Summary

Ischemic monomelic neuropathy (IMN) is a rare type of acute axonal neuropathy which results from ischemia of multiple nerves in affected limb. The electroneuromyography is useful in detecting characteristic features of this neuropathy. It usually occurs after vascular interventions. Here, we present the first case who has IMN secondary to lung cancer and/or chemotherapy and aim to draw attention to this infrequently recognized entity.

Keywords: EMG; ischemia; ischemic monomelic neuropathy; lung cancer; neuropathy; pain.

Özet

İskemik monomelik nöropati, etkilenmiş ekstremitede multipl sinirlerin iskemisi sonucu oluşan nadir bir akut aksonal nöropatidir. Elektronöromiyografi bu nöropatinin karakteristik özelliklerini saptamak için çok yardımcıdır. Burada akciğer kanseri ve/veya alınan kemoterapi nedeniyle oluşan ilk iskemik monomelik nöropati olgusu sunuldu ve bu az tanınan duruma dikkati çekmek hedeflendi.

Anahtar sözcükler: EMG; iskemi; iskemik monomelik nöropati; akciğer kanseri; nöropati; ağrı.

Introduction

Ischemic monomelic neuropathy (IMN) is a rare type of acute neuropathy which results from occlusion or shunting of blood supply of a major proximal limb artery. Multiple simultaneous axonal mononeuropathies in the affected limb without significant muscle necrosis are seen in IMN.^[1,2] It usually occurs after vascular interventions for hemodialysis.^[3,4] Herein, we report a lung cancer patient who experienced IMN of the left lower extremity during chemotherapy/radiotherapy treatment to draw attention to this infrequently recognized entity.

Case Report

A 36-year-old woman was admitted to the clinic with progressive pain and numbness in her left leg for 3 weeks. She was under chemotherapy and radiother-

apy treatment for her lung cancer. Physical and neurological examination revealed that motor strengths were 4/5 in ankle dorsiflexors and ankle plantar flexors, and 3/5 in extensor hallucis longus. Hypoesthesia was present in the anterior left lower leg and anterior foot. Arterial pulses were absent in the left dorsalis pedis, tibialis anterior, and popliteal arteries. Lumbosacral magnetic resonance imaging revealed nonspecific degenerative changes. Embolic occlusion of the left femoral artery was seen in lower extremity arterial Doppler ultrasonography. Electrophysiological nerve conduction studies (Table 1) revealed decreased compound motor action potential amplitudes in the left tibial (Fig. 1) and common peroneal nerves (Fig. 2). Sensory nerve action potential of the left sural nerve was absent. Needle electrode investigations showed neurogenic motor unite potentials mainly in the distal muscles of the left lower limb. These find-

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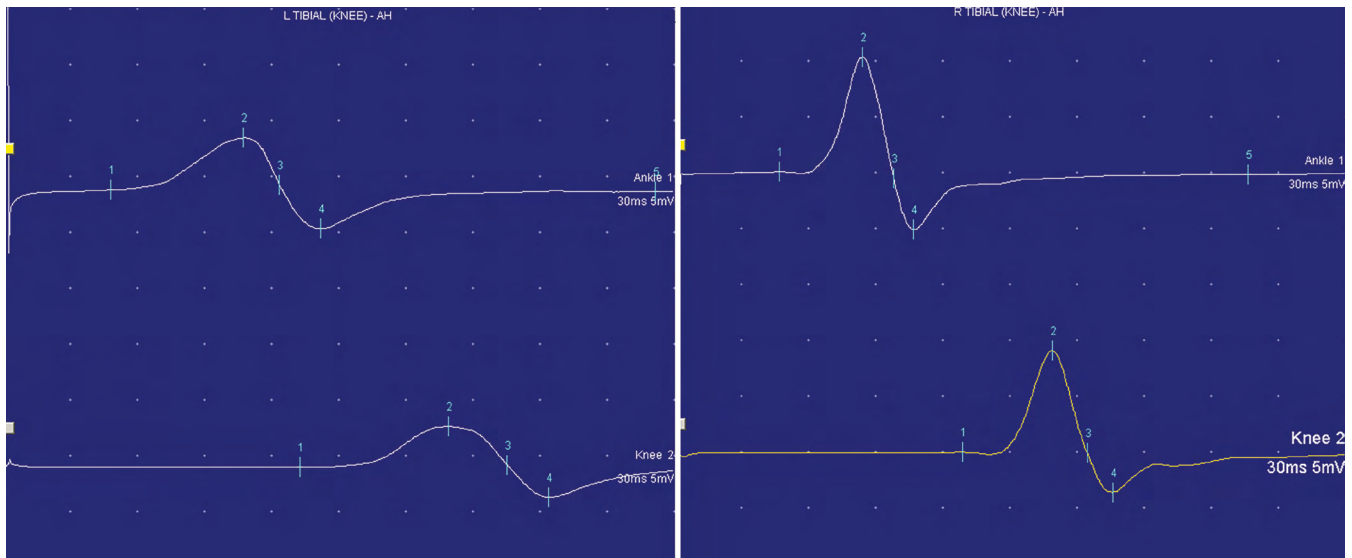


Figure 1. Nerve conduction studies of bilateral tibial nerves.

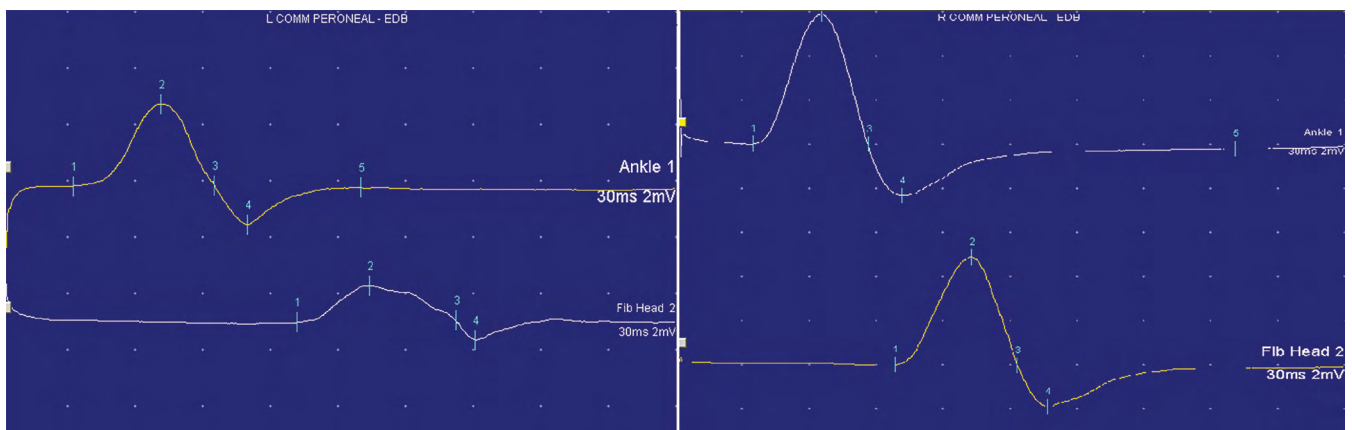


Figure 2. Nerve conduction studies of bilateral common peroneal nerves.

ings were suggestive of predominantly sensorimotor axonal neuropathy of the left lower limb; therefore, diagnosis of IMN was established.

Discussion

Severe burning pain, numbness, paleness, pulselessness along with hypoesthesia, and motor dysfunction in multiple nerve areas in the same extremity were suggesting IMN due to arterial occlusion in our patient. Peripheral arterial embolisms originating from malignant tumors are rare manifestation of cancers. To the best of our knowledge, there is no report of IMN secondary to cancers and/or chemotherapy in English literature. This rarely recognized entity was commonly reported in upper extremities of patients with hemodialysis fistulas.^[3,5] Vascular surgical procedures (i.e., vascular surgery involving the thoracoabdominal aorta and its caudal arterial channels), thromboembolisms, traumas, injections, infections of the arteries, and rarely long duration

tourniquet or tight immobilization bandages have also been described as etiologic factors of IMN.^[1,4,6,7] Since there was not any history of interventional procedure or trauma, embolic occlusion of the left femoral artery was probably occurred due to cancer and/or chemotherapy-induced thrombosis in our patient. In IMN, ischemia initially affects the most susceptible area – the axon of the nerve – and causes axonal sensorimotor neuropathy which is prominent at the distal parts of the extremities. The electroneuromyography is quite useful in detecting characteristics features of this neuropathy. The muscle, skin, bone, and other tissues are usually spared at the beginning depending on the severity and duration of ischemia. Detailed physical examination including pulse checking in all patients who present with acute painful limbs is important to disclose any arterial supply problem in the extremity, especially in patients with important risk factors such as history of vascular interventions or tendencies for thrombo-

Table 1. Electrophysiological nerve conduction studies									
Nerve/sites	Rec. site	Latency ms	Peak ampl μV	Distance cm	Velocity m/s				
Sensory NCS									
R sural - Lat malleolus									
Calf	Lat malleolus	2.85	19.8	13	45.6				
L sural - Lat malleolus									
Calf	Lat malleolus	0	0						
Nerve/Sites	Latency ms	Ampl mV	Distance cm	Velocity m/s					
Motor NCS									
L comm peroneal - EDB									
Ankle	3.25	2.9	5.5						
Fib Head	13.20	1.4	32.5	32.7					
R comm peroneal - EDB									
Ankle	3.50	5.9	7						
Fib Head	9.85	4.9	31	48.8					
L tibial (knee) - AH									
Ankle	4.80	4.7	8						
Knee	13.25	3.7	35	41.4					
R tibial (knee) - AH									
Ankle	4.70	10.3	9						
Knee	12.90	9.1	36	43.9					
Nerve	Min F lat ms								
F wave									
I comm peroneal - EDB	57.50								
L tibial (knee) - AH	54.30								
R tibial (knee) - AH	46.15								
EMG summary table	Spontaneous					MUAP			Recruitment
	IA	Fib	PSW	Fasc	H.F.	Amp	Dur.	PPP	Pattern
Needle EMG									
L. tibialis anterior	N	None	None	None	None	1+	N	1+	Slightly reduced
l. gastrokin	N	None	None	None	None	1+	2+	3+	Reduced
L. vastus medialis	N	None	None	None	None	N	N	N	N
L. bic. fem. (S. head)	N	None	None	None	None	Slightly increase	N	1+	Slightly reduced

embolisms. Reversible electrophysiological changes have been reported in the course of IMN after reconstruction of vascular supply.^[7] Therefore, early diagnosis of arterial supply problem-related neurologic complications and restoration of arterial supply are important to reverse the symptoms.

To conclude, arterial embolism due to cancer and/or chemotherapy-induced thrombosis is quite rare, it may result with IMN. Awareness and early recognition of the problem is of particular importance to reverse the symptoms and to prevent irreversible damage.

Informed Consent: *Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.*

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References

1. Wilbourn AJ, Furlan AJ, Hulley W, Ruschhaupt W. Ischemic monomelic neuropathy. *Neurology* 1983;33:447–51.
2. Tutkavul K, Türkoğlu R, Tireli H. Ischemic monomelic neuropathy: Case report. *Arch Neuropsychiatry* 2003;40:91–4.
3. Thermann F, Kornhuber M. Ischemic monomelic neuropathy: A rare but important complication after hemodialysis access placement—a review. *J Vasc Access* 2011;12:113–9.
4. Lekhra OP, Maheshwari A, Rathore Y. Ischemic monomelic neuropathy-A Case Report. *IOSR J Dent Med Sci* 2014;13:30–2. [CrossRef]
5. Han JS, Park MY, Choi SJ, Kim JK, Hwang SD, Her K, et al. Ischemic monomelic neuropathy: A rare complication after vascular access formation. *Korean J Intern Med* 2013;28:251–3. [CrossRef]
6. Levin KH. AAEE case report #19: Ischemic monomelic neuropathy. *Muscle Nerve* 1989;12:791–5. [CrossRef]
7. Andary MT. Ischemic Monomelic Neuropathy. Available at: <http://emedicine.medscape.com/article/315915-overview>. Accessed Jun 14, 2014.