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Anterior femoral cutaneous neuropathy after extracorporeal membrane oxygenation: a case report

YOUHO MYONG[1*], SHINHOO KIM[1], SANG YOON LEE[2†]

Seoul National University Hospital, Department of Rehabilitation Medicine[1], Seoul National University Boramae Medical Center, Department of Rehabilitation Medicine[2]

Objective
Transarterial catheterization is a widely used technique in various interventional procedures, such as coronary and peripheral angiogram, atherectomy, and intraaortic balloon insertion. The overall complication rate after transfemoral cannulation is low, of which peripheral neuropathy is even rarer. This case report describes anterior femoral cutaneous neuropathy that occurred after extracorporeal membrane oxygenation.

Methods
A thirty-one year old woman presented with hypesthesia and sharp, tingling pain in her right medial thigh and calf for three months. She recently received post-cardiac arrest ICU care due to viral endocarditis; the patient underwent a six-day course of venoarterial extracorporeal membrane oxygenation. Over the course of three months after ICU care, her symptoms aggravated. A series of careful physical examinations and electrodiagnostic studies were conducted.

Results
Initial neurological examination revealed right anteromedial thigh and lower leg allodynia and hypesthesia (Figure 1) without motor weakness. The electrodiagnostic study revealed right anterior femoral cutaneous neuropathy. A follow-up study after three months showed an improving state of the neuropathy with partial axonal loss (Table 1, Figure 2).

Discussion
Although anterior femoral cutaneous neuropathy is a rare complication after transfemoral cannulation, clinicians should remain vigilant of the symptoms, and be prepared to rule out the diagnosis.

Table 1. Initial and Follow-up Results of Electrodiagnostic Studies

Nerve /Muscle	Stimulation Site	Right						Left					
		Initial			Follow-up			Initial			Follow-up		
Sensory NCS		Latency (ms)	Amplitude (μV)		Latency (ms)	Amplitude (μV)		Latency (ms)	Amplitude (μV)		Latency (ms)	Amplitude (μV)	
Superficial peroneal	Foot	2.71	17.3		2.40	15.0		2.86	16.4		2.08	16.6	
Sural	Lateral malleolus	2.40	26.0		2.55	31.6		2.55	27.1		2.66	38.9	
Saphenous	Ankle	2.76	5.3		2.29	6.6		2.40	6.3		2.19	9.8	
Lat Fem Cut	Thigh	2.08	6.9		2.66	9.8		1.77	7.0		2.29	9.0	
Ant Fem Cut	Inguinal	Not activated			2.14	4.2		1.77	7.2		2.24	6.2	
Motor NCS		Latency (ms)	Amplitude (mV)	CV (m/s)	Latency (ms)	Amplitude (mV)	CV (m/s)	Latency (ms)	Amplitude (mV)	CV (m/s)	Latency (ms)	Amplitude (mV)	CV (m/s)
Common peroneal	Ankle	3.39	4.1		2.50	6.7		3.23	5.5		2.92	3.4	
	Fibular head	8.49	3.7	45.0	9.48	6.4	44.4	8.13	3.4	49.0	9.48	3.4	47.2
Tibial	Ankle	3.44	21.7		3.07	22.7		3.44	19.2		3.18	22.7	
	Knee	9.79	15.7	56.7	10.73	22.0	45.7	9.84	17.3	56.2	10.89	18.4	45.4
Femoral	VM	4.01	10.3		4.53	12.9		3.28	9.7		4.69	11.1	

Needle EMG	Initial				Follow-up			
	IA	ASA	MUAP	IP	IA	ASA	MUAP	IP
Rt. VM	Normal	-	Normal	Full	Normal	-	Normal	Full
Rt. AL	Normal	-	Normal	Full				
Rt. TA	Normal	-	Normal	Full	Normal	-	Normal	Full
Rt. GCM	Normal	-	Normal	Full				
Rt. EDB					Normal	-	Normal	Full

* Ant Fem Cut, anterior femoral cutaneous nerve; AL, adductor longus; ASA, abnormal spontaneous activity; CV, conduction velocity; EDB, extensor digitorum brevis; GCM, gastrocnemius; IA, insertional activity; IP, interference pattern; Lat Fem Cut, lateral femoral cutaneous nerve; MUAP, motor unit action potential; Rt, right; TA, tibialis anterior; VM, vastus medialis.

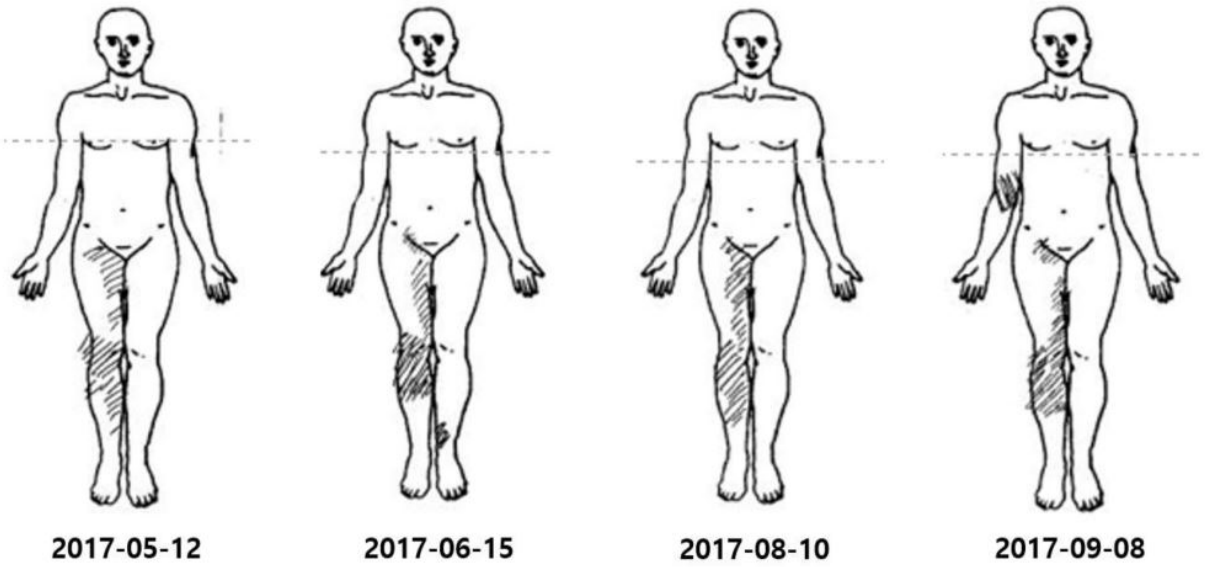

Figure 1. Serial Change of Hypesthetic and Paresthetic Regions

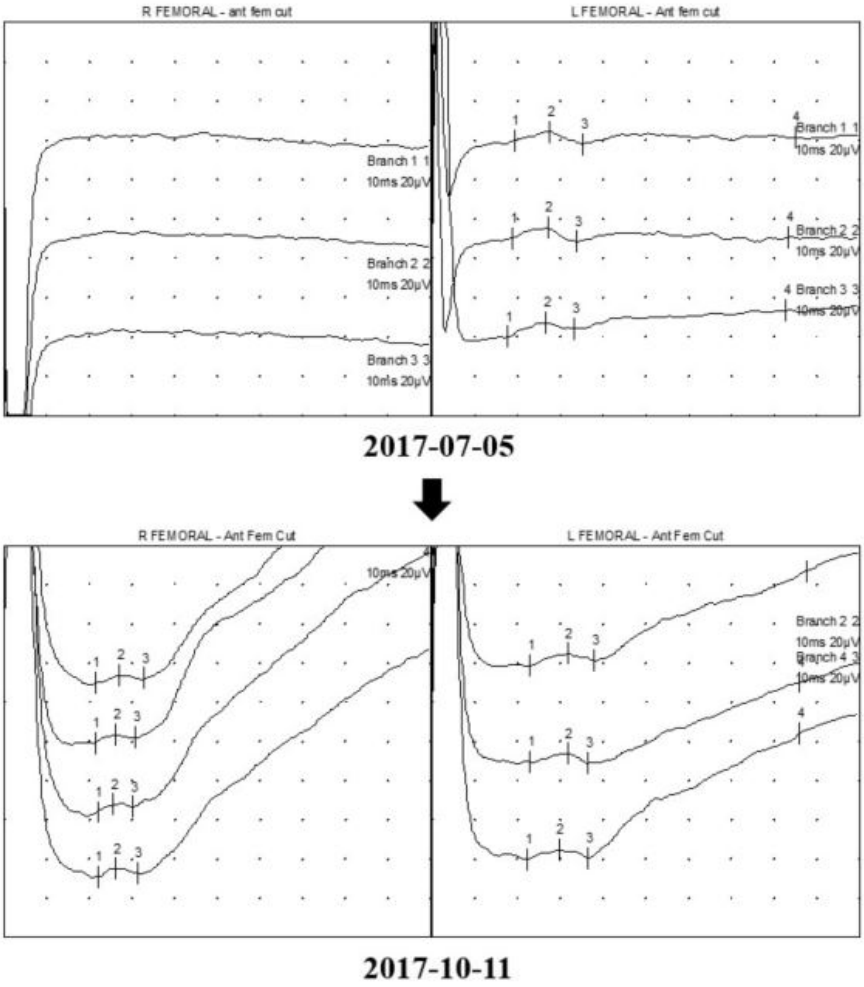

Figure 2. Change of Anterior Femoral Cutaneous Nerve Conduction Waveforms