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A Case of Paraneoplastic Myopathy from Advanced Gastric Cancer

Doyoung Yuk, MD[1)], Kyeong Eun Uhm, MD, PhD[1)]

[1)] Department of Rehabilitation Medicine, Konkuk University Medical Center and Konkuk University School of Medicine, Seoul, Korea

Introduction

Inflammatory myopathies (IM) are rare systemic autoimmune disorders characterized by proximal muscle weakness and elevated muscle enzymes. As a distinct subset of IM, paraneoplastic myopathy is caused by an underlying malignancy and serves as a critical clinical marker for occult lung, breast, or gastrointestinal cancers. Here, we report a rare case of a male patient whose severe IM was later identified as a paraneoplastic manifestation of advanced gastric cancer.

Case Report

A 63-year-old male with a history of chronic kidney disease on maintenance hemodialysis and non-ST-segment elevation myocardial infarction was admitted with a one-week history of progressive lower extremity weakness. Physical examination revealed proximal-predominant motor weakness (G3 to 4) compared to distal segments (G4 to 4+), with a markedly elevated serum creatine kinase (CK) level of 18,867 U/L. Lower extremity MRI showed diffuse, symmetrical muscle hyperintensities from the buttocks to the ankles, suggesting a myopathy exhibiting homogeneous involvement (Fig. 1). Electromyography (Table 1) and nerve conduction studies (Table 2) demonstrated severe sensorimotor polyneuropathy and generalized myopathy. A needle aspiration biopsy of the vastus lateralis muscle showed inflammatory cell infiltration with giant cells, consistent with IM.

A comprehensive malignancy workup, including tumor markers, CT, and FDG-PET, was unremarkable. The patient was diagnosed with idiopathic inflammatory myopathy (IIM) and treated with intravenous methylprednisolone pulse therapy followed by tacrolimus and prednisolone. He was subsequently transferred to the Department of Rehabilitation Medicine.

However, his clinical course fluctuated. During steroid tapering, the patient experienced a clinical relapse with worsening weakness (proximal G1+, distal G3+ to 4) and a CK rebound to 2,556 U/L (Fig. 2). He was transferred back to the Department of Neurology for a second course of pulse therapy and dosage escalation, and then returned to rehabilitation. During this period, persistent abdominal discomfort prompted an esophagogastroduodenoscopy, which revealed advanced gastric cancer, approximately four months after the initial onset of symptoms (Fig. 3).

Consequently, the IIM was concluded to be of paraneoplastic origin. Despite undergoing a subtotal gastrectomy, he experienced a clinical course complicated by pneumonia and septic shock, eventually leading to his demise.

Lower extremity MRI

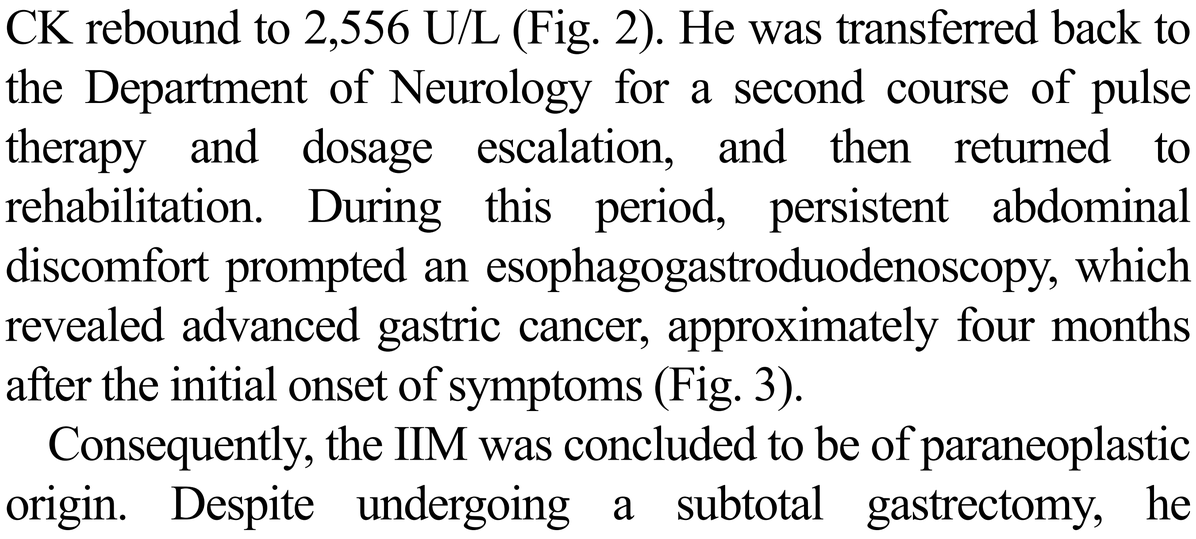

Figure 1. Lower extremity MRI. Coronal thigh (A) and lower leg (B) T2-weighted fat-saturated images show diffuse, symmetrical increased muscle signal intensity from the buttocks to the ankle level involving all compartments, with relatively preserved intermuscular and crural fascial planes and no significant subcutaneous signal change.

Electrodiagnostic studies

Table 1. Findings of needle electromyography.

Muscle	Spontaneous activity					Motor unit action potential			Recruitment
	IA	Fib	PSW	Fasc	CRD	Amp	Dur	Poly	
R. Vastus medialis	Inc	1+	1+	None	++	Low	Short	+	N
R. Iliopsoas	Inc	None	1+	None	++	Low	Short	+	N
L. Deltoid	Inc	None	1+	None	++	Low	Short	+	Early

R., Right; L., Left; IA, Insertional activity; Fib, Fibrillation potentials; PSW, Positive shar p waves; Fasc, Fasciculation potentials; CRD, Complex repetitive discharge; Amp, Amplitude; Dur, Duration; Poly, Polyphasia; Inc, Increased; N, normal;

Table 2. Findings of nerve conduction study.

	Right			Left		
	Latency	Amplitude	Velocity	Latency	Amplitude	Velocity
Motor						
Median	5.73 ms	4.9 mV	40.5 m/s	5.26 ms	5.3 mV	37.6 m/s
Ulnar	3.07 ms	8.6 mV	37.5 m/s	3.33 ms	6.7 mV	38.0 m/s
Peroneal	5.68 ms	1.0 mV	28.0 m/s	5.68 ms	0.7 mV	29.5 m/s
Tibial	6.77 ms	3.7 mV	30.9 m/s	6.46 ms	2.3 mV	29.4 m/s
Sensory						
Median	NR	NR	NR	NR	NR	NR
Ulnar	NR	NR	NR	NR	NR	NR
Superficial peroneal	NR	NR	NR	NR	NR	NR
Sural	NR	NR	NR	NR	NR	NR

NR, No response;

Fluctuations of serum CK levels

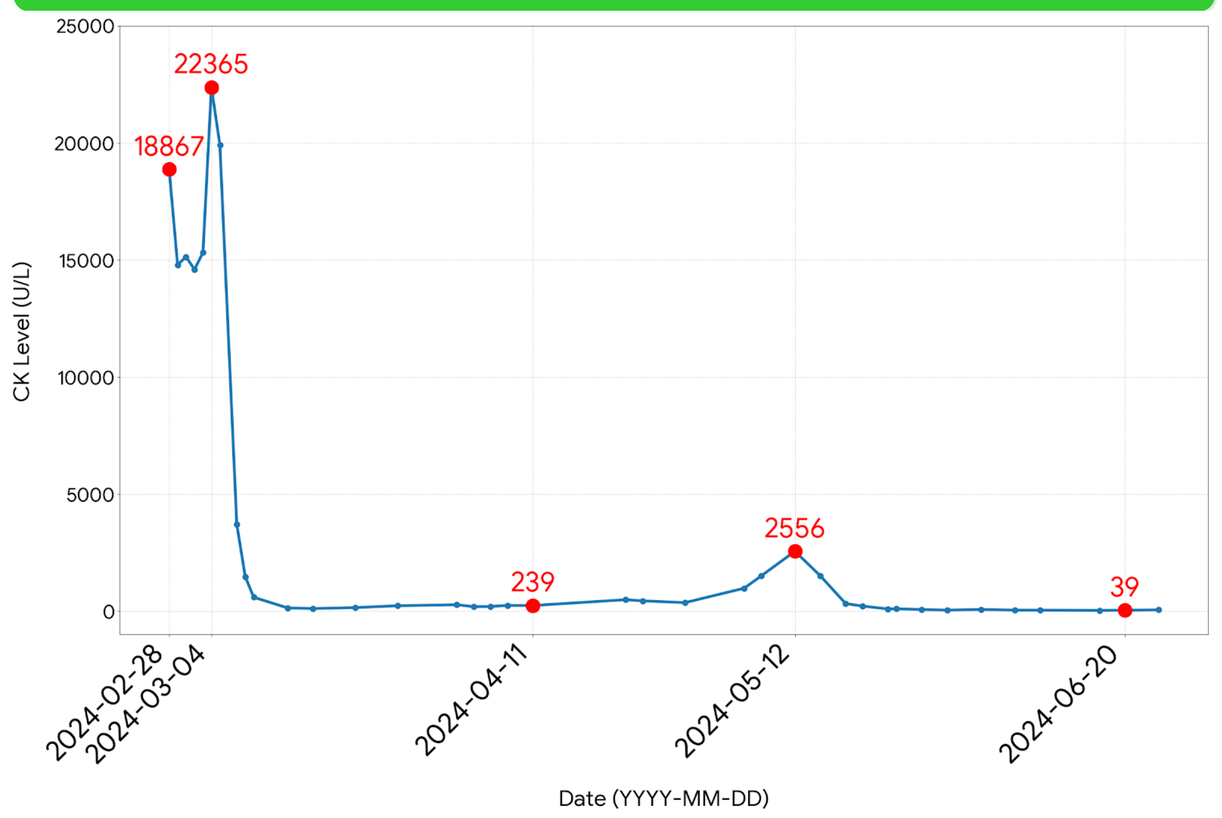

Figure 2. Changes in serum CK levels. The graph shows a marked initial elevation of serum CK levels followed by a rebound during steroid tapering, eventually reaching stabilization.

Esophagogastroduodenoscopy

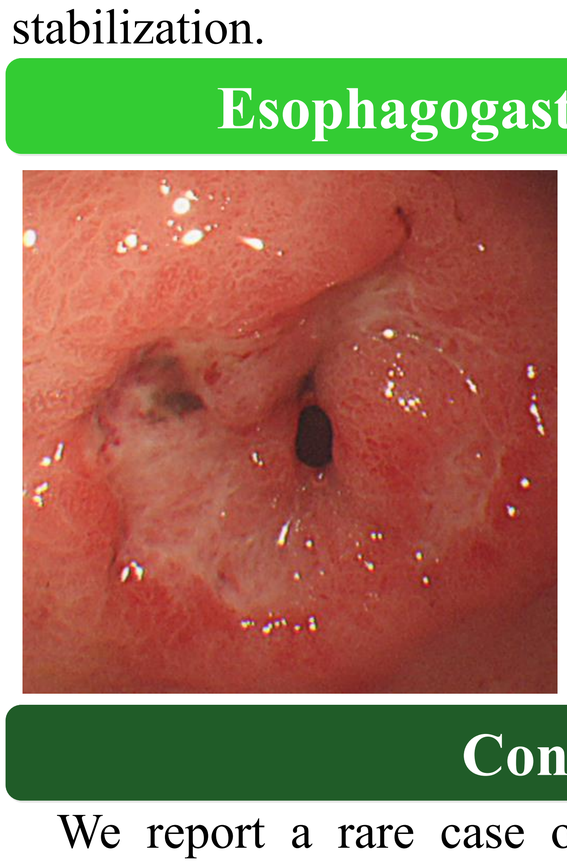

Figure 3. Endoscopic findings. Esophagogastroduodenoscopy shows an irregular ulcer with a spiculated margin in the prepyloric antrum surrounding the pyloric ring, and an endoscopic biopsy was performed.

Conclusion

We report a rare case of paraneoplastic myopathy in which gastric cancer was detected during rehabilitation despite an initially negative malignancy screening. This case highlights the importance of continued surveillance for occult cancer when clinical suspicion persists. Given that myopathic improvement is closely linked to the treatment of the underlying malignancy, a multidisciplinary approach is essential for timely diagnosis and management.