P 1-135

Immune checkpoint inhibitor (ICPI)-related GBS: a CASE REPORT

Hannah Lee[1*], Duk-Hyun Sung[1†]

Samsung Medical Center, Department of Physical and Rehabilitation Medicine[1]

Introduction

Immune checkpoint inhibitors (ICPI) therapy provokes human natural immune system to fight cancer. In case of pembrolizumab, programmed cell death 1 (PD-1) blockade Results in reduced inhibition of peripheral regulatory T cells, which allow for self-tolerance. It frequently induces variable immune-related adverse events including neuromuscular disease such as myasthenia gravis, Guillain-Barre's Syndrome (GBS) and chronic inflammatory demyelinating polyneuropathy. We describe a case of GBS as ICPI-related adverse event.

Case presentation

A 68-year-old man with non-small cell lung cancer was started on immunotherapy after disease progression following 4 cycles of paclitaxel and carboplatin. He received pembrolizumab for 3 cycles. Two weeks after the 3rd cycle of pembrolizumab, he was referred our emergency room for fever reached 38.5 °C with elevated acute phase reactants. On the day after admission, he complained of both legs weakness and was unable to stand without assist. There was no obvious lesion or finding that could explain his progressive weakness on brain MRI. Lumbar spine MRI demonstrated linear enhancement in leptomeningeal surface of spinal cord and cauda equina without nodularity suggesting leptomeningeal seeding or GBS (Fig 1). Lumbar puncture revealed elevated protein of 771 mg/dl and cytopathology in cerebrospinal fluid identified no malignant cells. On motor nerve conduction study, amplitudes of compound muscle action potential of right median nerve and right ulnar nerve were decreased with delayed distal latency and conduction velocity, respectively. No motor nerve potential was recorded in both peroneal and both posterior tibial nerve. Also, no sensory nerve action potential was evoked in right median, right ulnar and both sural nerve as well as loss of F-waves of right ulnar, both peroneal and both posterior tibial nerve (table 1). With the above findings, we presumed GBS, immune-related adverse event secondary to pembrolizumab. He received intravenous immunoglobulin (IVIG; 0.4g/kg/day) for 5 days and oral prednisolone beginning at 2mg/kg/day followed by 4-week tapering course. At discharge 31 days after onset, he had regained antigravity strength in his proximal lower extremities, but retained weakness in distal lower extremities.

Conclusion

GBS is the second most common ICPI-related neuromuscular complication, but the exact mechanism by which ICPIs induce GBS is unclear. ICPI-related GBS follows the typical clinical presentation, course and electrophysiologic characteristics of non-ICPI associated GBS. The development of new drugs can give rise to an unexpected adverse event

although it is not common. The early participation of neuromuscular specialists able to expedite these problems will become increasingly important.

Table 1. Results of nerve conduction study

	Latency (ms)	Amplitude (uV/mV)	Conduction velocity (m/s)
SENSORY			
Median, Rt			
Finger	NR	NR	
Wrist	NR	NR	
Elbow	2.8	1.13	43
Ulnar, Rt			
Finger	NR	NR	
Wrist	NR	NR	
Elbow	3.0	3.96	41
Sural			
Rt	NR	NR	
Lt	NR	NR	
MOTOR			
Median, Rt			
Wrist	3.5	1.25	
Elbow	11.0	0.45	32
Axilla	15.1	0.35	34
Ulnar, Rt			
Wrist	3.1	0.69	
Elbow	9.5	0.41	40
Axilla	14.1	0.26	36
Peroneal, Rt	NR	NR	
Peroneal, Lt	NR	NR	
Tibial, Rt	NR	NR	
Tibial, Lt	NR	NR	

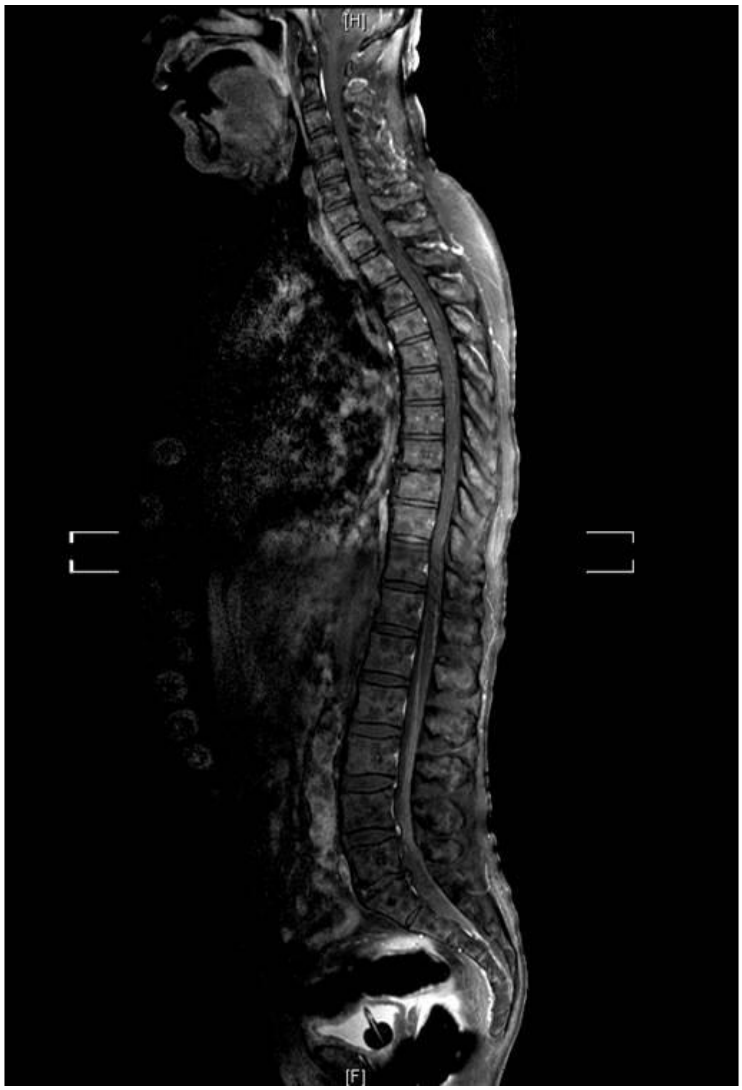

fig1. Fat Suppressed Contrast-Enhanced T1-Weighted Sagittal MRI image shows linear enhancement along the spinal cord surface including cauda equina.