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# Man presenting with sudden weakness of the left hand and pain by non-SCLC with brain metastatasis

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**BACKGROUND**
Incidental sensory polyneuropathy is common, but such patients tend to be overlooked by clinicians due to its typically benign course and the absence of proper treatment. However, sensory polyneuropathy without predisposing factors should be traced back to its cause.

**Case presentation**
A 63-year-old male visited the Department of Neurosurgery for radiating pain in his right arm and elbow with mild weakness of the right hand, especially the fourth and fifth fingers. Cervical spine magnetic resonance imaging (MRI) showed minimal central disc protrusion at C6-7, mild central disc protrusion and C6-7 spondylosis. He was referred for an electrodiagnostic study to evaluate weakness inconsistent with MRI findings Nerve conduction studies revealed distal symmetric sensory polyneuropathy in both the upper and lower extremities. Needle electromyography showed denervation potential of the right pronator teres and extensor carpi radialis longus muscles. The patient was diagnosed with mid to C6 and C7 radiculopathies. However, the findings were inconsistent with his symptoms. The patient's sensory polyneuropathy could not be explained by his medical or social history. Predisposing undiscovered disease was evaluated by physicians, including a pulmonologist and a gastroenterologist. Chest computed tomography (CT) revealed a 7.2-cm heterogeneously enhancing mass in the right lower lobe anterobasal segment (Fig. 1) that was diagnosed as squamous cell carcinoma on biopsy. Brain MRI revealed a 2.4 x 2.0 x 2.5-cm necrotic mass with vasogenic edema in the left ‘hand knob’ of the primary motor cortex (Fig. 2). Therefore, we concluded that the sensory polyneuropathy was related to a paraneoplastic syndrome, and that the hand weakness was caused by brain metastases in the primary motor cortex of the hand. Indeed, denervation potentials of the right forearm have been related to trans-synaptic denervation. The patient was referred to another hospital for further radiotherapy and other oncologic treatment.

**Conclusions**
When axonal sensory polyneuropathy or denervation potentials do not correlate with a patient’s symptoms, clinicians should trace etiologies. This Case report describes incidental sensory polyneuropathy caused by paraneoplastic syndrome. Considering the increasing prevalence of cancer, this case highlights the importance of proper concern on

the part of physicians with regard to subtle and incidental changes in nerve conduction studies and needle electromyography.

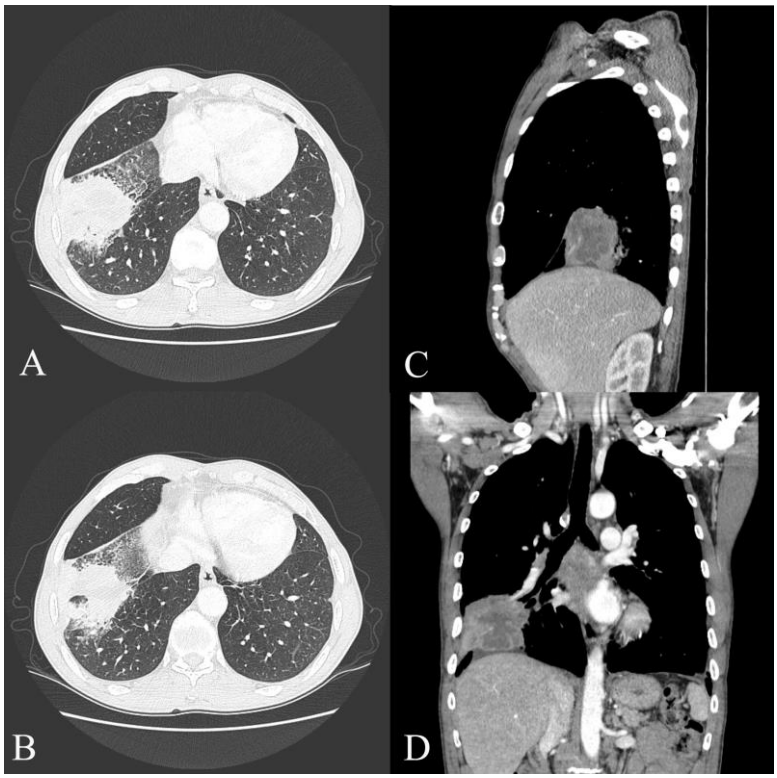

Fig. 1. CT scan showed a 7.2 cm sized heterogeneously enhancing mass with necrosis in RLL anterobasal segment. A, B: axial images of lung, C: coronal image of lung, D: sagittal image of lung.

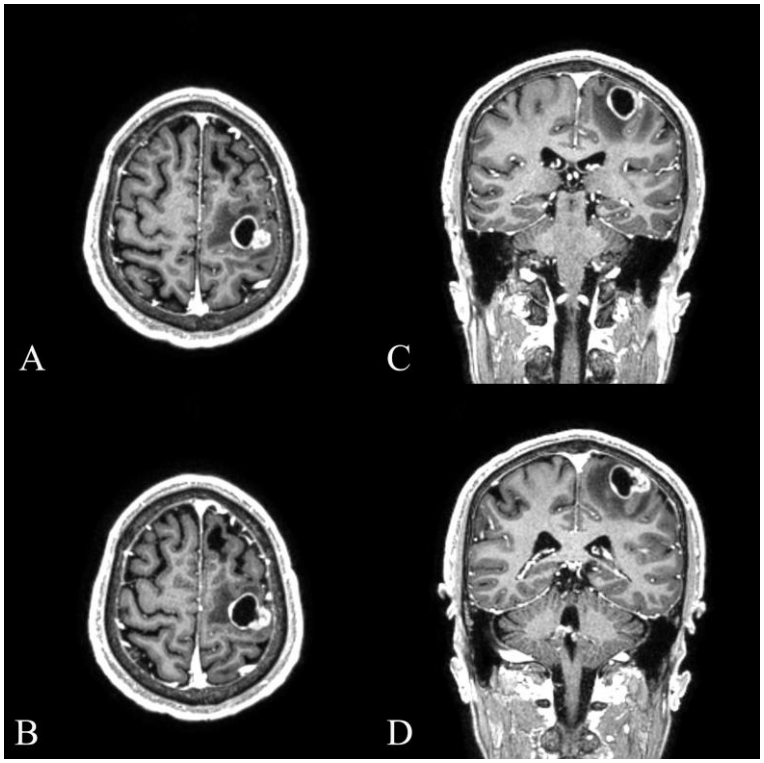

Fig. 2. MRI (enhance) revealed 2.4 x 2.0 2.5 cm sized necrotic mass with peritumoral edema was located at left hand knob of primary motor cortex. A, B: axial images of brain, C, D: coronal images of brain