

# Transient Brachial Plexopathy: A Rare Positional Case

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## Abstract

The incidence of Brachial Plexus injuries is rare, occurring at 1.75/100000/year with the commonest mechanism being traction injuries, followed by root avulsions. Only three cases relating transient brachial plexopathy to positioning are described in the literature. In this case report we present the case of a 63 years old male who developed transient brachial plexopathy after lying unconscious on the floor for 24 hours.

## CASE REPORT

A 63 year old, diabetic gentleman was admitted in hospital after lying unconscious on the floor for 24 hours. He was found dehydrated and comatose by his daughter. After initial resuscitation it was noted that he was unable to use his left arm and hand, and had an obvious wrist drop. He was taken to hospital for investigation 24 hours following his fall.

The patient remembered having sustained a mechanical fall while tripping against a carpet edge at home. He had a vague recollection of not being able to call for help while lying on the floor. He reported no pain or symptoms other than a left sided wrist drop. The patient reported no recent onset of symptoms such as clumsiness, dropping objects or struggle to perform fine movements. His gait had not changed either. Except for non insulin dependant diabetes, his past medical history was unremarkable. He was on Metformin as only medications. He was a non smoker and his alcohol intake was less than 5 units a week.

The patient was an oriented man who looked healthy and demonstrated his chronological age. Inspection revealed an obvious wrist drop on the left side with his forearm supported by his left thigh. There was no obvious muscle wasting noted in upper or lower limbs. No dermatological lesions or bruises noted. His gait showed a normal cycle and he was well balanced with a negative Romberg test. He had marked left lateral sided neck tenderness. There was a grade 1/5 power on the left C5 to T1 myotomes. Loss of sensation in the left C5 to T1 dermatomes was also found. His tone was significantly decreased and reflexes were absent in his left upper limb. Hoffman test was negative and interestingly some clonus was noted. The rest of his neurological

examination was normal.

Routine blood tests were done including serum protein electrophoresis, folates, Urea and electrolytes and a full blood count. All were within normal range.

Radiographs showed no bony injury in his cervical spine of upper limb. Chest radiograph showed no evidence of raised hemi diaphragm suggesting phrenic nerve palsy. MRI of C-spine and brachial plexus were reported as normal with minimal degenerative changes in the C-spine. EMG confirmed neuropraxia of the roots of the brachial plexus.

The patient was managed conservatively with hand physiotherapy. Occupational therapy was guided towards rehabilitation and restoration of function. Function was partly restored within 1 month and fully restored within 3 months.

## DISCUSSION

The incidence of Brachial Plexus injuries is rare, occurring at 1.75/100000/year with the commonest mechanism being traction injuries, followed by root avulsions <sup>1</sup>.

Prone positioning as the cause of brachial plexopathy is rare and there are only three cases described in the literature, two of which resulting from prone position during an ITU admission <sup>2</sup>. The third case followed an operative procedure with longitudinal chest rolls and the arms abducted and elbows flexed <sup>3</sup>.

This case demonstrates that mal positioning can cause a brachial plexus injury. Causative positions as described in cadavers and case studies include abduction with external

rotation and posterior shoulder displacement<sup>4</sup>. In addition literature suggests that downward traction of the arm or widening of the shoulder-neck angle can lead to upper root and trunk avulsion lesions. Forcible upward traction may cause avulsion of T1 and C8<sup>5</sup>.

It is useful to keep in mind other possible diagnosis while examining these patients. In fact the pattern of involvement is important.

Is the neuropathy focal, multifocal or symmetric? Focal neuropathies include common compressive neuropathies such as carpal tunnel syndrome, ulnar neuropathy at the elbow or peroneal neuropathy at the fibular head<sup>6, 7, 8</sup>. A multifocal neuropathy suggests a mononeuritis multiplex that may be caused, for example, by vasculitis or diabetes. If the neuropathy is symmetric, is it proximal or distal? Most toxic and metabolic neuropathies present as a distal symmetric or dying-back process<sup>9</sup>. Proximal sensory neuropathies are rare and include porphyria<sup>10</sup>.

Predominantly motor neuropathies are often proximal and include acquired inflammatory neuropathies such as Guillain-Barré syndrome. An exception is lead neuropathy, which initially affects motor fibers in radial and peroneal distributions. Benjamin Franklin may be known for his role as a US statesman, but he was also a budding physician. He was also one of the first to observe that prolonged exposure to lead would cause sickness. While working as a printer he noticed that some of his colleagues had a condition that they called "The Dangles" - wrist drop caused by lead poisoning.

In this case we are suggesting that the patient was lying prone with his neck hyper-extended laterally, causing neuroapraxia of the roots of his brachial plexus. There is evidence to support that injury can be sustained following

45minutes of compression or stretch<sup>11</sup>.

### CONCLUSION

This case illustrates a rare cause of transient brachial plexopathy. The differential diagnosis in these types of presentations is generally varied and a thorough physical examination with focused blood and imaging investigation can generally solve the diagnosis puzzle. This case study demonstrates that a sustained prone position can lead to root avulsion causing a brachial plexopathy.

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