

# Calcium, Phosphorous, Magnesium and Iron in Motor Neuron Disease Cases

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**Abstract:** Motor neuron diseases are characterized by selective damage to the neural system that mediate voluntary movement. The first abnormality is observed in the hands, where the patient become aware of weakness or clumsiness of movement of the fingers, weakness of shoulder movement, muscular cramps is often an early symptom. Amyotrophic lateral sclerosis is a chronic progressive disease with progressive motor neuron disorder. The present attempt to assess any relationship of calcium, phosphorous, magnesium and iron in motor neuron disease cases.

**Keywords:** Calcium, phosphorous, magnesium, iron, motor neuron disease.

## 1. Introduction

Trace elements like calcium, phosphorous, magnesium plays important role in stabilization of membrane function. Motor neuron disease may be triggered with the deficiency of calcium, magnesium, and facilitate entry of toxic metals in nervous system (Ahlskog *et al.*, 1995). Godoy *et al.*, 1992 studied calcium and phosphorous in spine disorders with motor neuron disease and draws special attention towards toxic and metabolic factors.

Magnesium ion functions as a cofactor in almost in all cellular metabolism, thus impaired mimic of myriad of other disease processes. Painful muscle cramp may be early sign of magnesium deficiency. Magnesium is essential for regulation of muscle contraction (Grober *et al.*, 2015). Iron is a vital cofactor in metabolic processes in CNS (Crichton *et al.*, 2021).

## 2. Material and Methods

### A. Methodology

In all 50 control cases and 19 motor neuron cases blood samples were assessed for their calcium, phosphorous, magnesium and iron status. The serum samples were subjected for calcium, phosphorous, magnesium and iron. Estimation of calcium was done as per Trindar (1956). Whereas, phosphorous

was done as per Fiske and Subbarow (1925) magnesium as per Neill and Neely, (1956) and iron (Ramsay, 1958).

The comparison of control and motor neuron disease status of calcium, phosphorous, magnesium and iron was done by using paired t test (Snedecor and Cochran, 1980).

## 3. Results and Discussion

Study revealed non-significant decrease of serum calcium, and magnesium levels, significantly lowering of phosphorous in motor neuron disease cases as compared to control. The disturbance in calcium metabolism may stimulate motor neuron disease (Rison and Beydoun, 2010). The lowering of calcium, phosphorous and magnesium might be responsible for triggering of clinical manifestations of motor neuron disease. The significant increase in iron levels were observed in motor neuron disease, this might be because of deregulation of iron metabolism in motor neuron disease (Charlotte Veyrat-Durebex *et al.*, 2014) (Table 1).

## 4. Conclusion

This paper presented a study on calcium, phosphorous, magnesium and iron in motor neuron disease cases.

## References

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Table 1  
Comparison of (Mean ± S.E.) of control and Motor Neuron Disease Cases

Parameters	Control (n=50) Mean ± S.E	Motor Neuron Disease (n=19) Mean ± S.E
Calcium (mg/dl)	9.733 ± 0.088	9.653 ± 0.166 <sup>NS</sup>
Phosphorous (mg/dl)	3.956 ± 0.076	3.630 ± 0.165*
Magnesium (mg/dl)	2.403 ± 0.715	2.401 ± 0.124 <sup>NS</sup>
Iron (µg/dl)	150.762 ± 2.516	242.179 ± 9.672**

NS= Non-Significant, \* = p ≤ 0.05, \*\* = p ≤ 0.01

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