



## Musculoskeletal deformities and fractures in Parkinson's disease

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Parkinson's disease (PD) is a neurodegenerative condition that is characterized by a variety of severely debilitating motor and non-motor symptoms. Further, an increased risk of skeletal deformities and fractures, conditions ranging from scoliosis to osteoporosis, is of noteworthy importance. Following are some of the skeletal deformities seen in PD.

Scoliosis, a lateral curving of the spine, is more common in PD patients than in the general population. Although the exact relationship between scoliosis and PD is not clearly known, it has been suggested that scoliosis is closely related to the dopamine deficiency associated with PD. Several studies have noted that the direction of the spinal curvature is correlated with the laterality of the major signs and symptoms of PD.<sup>1</sup> It has been suggested that patients may slowly develop a tendency to lean towards the affected lagging side of PD during walking. This may result in the curvature of the spine seen in scoliosis, although genetic, biomechanical, or hormonal factors may play a role as well.

Osteoporosis is a skeletal condition that is characterized by bone wasting and loss of bone density. This is a significant risk factor for fractures in the elderly population. Within PD patients, there is an increased frequency of osteoporosis in both males and females.<sup>2</sup> Commonly bone mass is maintained by

bone formation/re-absorption and is reliant on day-to-day mobility and exercise. However, for PD patients, this mobility and exercise are significantly reduced as most of their time is spent sitting or lying down. This is especially prevalent in the moderate to advanced stages of PD. The results may include an increased rates of bone re-absorption, loss in bone density, and fractures particularly around the hip.<sup>2</sup> Combined with the inherent disposition of falling among PD patients, due to postural imbalance and neurological impairment, the risk of fracture is certainly a cause for concern. Bone mass is measured by a bone density test which should be used for elderly PD patients to establish a baseline. Thereafter, they should be monitored periodically for the occurrence of osteoporosis.

### REFERENCES

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2. Invernizzi M, Carda S, Viscontini GS, Cisari C. Osteoporosis in Parkinson's Disease. *Parkinsonism and Related Disorders* 2009; 15: 339-346.

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