

## **Osteoporosis in neurogenic heterotopic ossification patients**

Na Na Lim<sup>1\*</sup>, Dong Youl Lee<sup>1</sup>, Ji Hong Cheon<sup>1</sup>, Geun Su Lee<sup>1</sup>, Youn Koung Cho<sup>1†</sup>, Sung Hoon Lee<sup>1</sup>, Hyun Kyung Lee<sup>1</sup>

Kwangju Christian Hospital, Department of Rehabilitation Medicine<sup>1</sup>

### **Introduction**

Heterotopic ossification (HO) is true bone in extraskelatal ectopic sites. For unknown reasons, pluripotent mesenchymal cells in soft tissues differentiate into osteoblasts and other cell lines involved with bone formation. HO usually presents a swollen, warm painful joint and make it difficult to maintain joint range of motion and its function. Furthermore, HO can also contribute to the development of pressure ulcers or causes compression of nerves and blood vessels and eventually patients need to have an operation. Osteoporosis is another musculoskeletal problem for the patients with prolonged therapeutic bed rest, immobilization due to motor paralysis from injury of the central nervous system or peripheral nerves. Reduction of mechanical stress on bone inhibits osteoblast-mediated bone formation and accelerates osteoclast-mediated bone resorption. We found out recently, a few HO patients had severe osteoporosis and gave pharmacological intervention such as zoledronic acid or ibandronic acid.

### **Cases**

Following patients were tetraplegia and totally dependent on caregiver for transport. Both of them were taking dinol for their hip joint heterotopic ossification. Case 1. A 24-year-old male patient who is tetraplegia d/t cervical level spinal cord injury, ASIA B(2016. 2. 24) and 18 months after the attack, his dual-energy X-ray absorptiometry(DEXA) Results reveal that Z-score -3.4 in the Rt. femur trochanter. Case 2. A 39-year-old female patient who is tetraplegia due to SAH at anterior communicating artery aneurysm rupture(2016. 6. 22) and 13 months after the attack, her DEXA Results reveal that Z-score -5.7 in the left femur trochanter.

### **Conclusion**

Age is a high risk factor for osteoporosis. In the newly updated osteoporosis guideline NOGG 2017, fracture probability should be assessed in postmenopausal women, and men age 50 years or more, who have risk factors for fracture, using FRAX. In individuals at intermediate risk, bone mineral density (BMD) measurement should be performed using dual-energy X-ray absorptiometry and fracture probability re-estimated using FRAX. Those patients were far from younger than 50 years old, but have shown absolutely low bone mineral density. Loss of bone and muscle develop in a vicious circle of immobilization caused by underlying diseases. Recommendation of osteoporosis screening test such as DEXA for the young HO patients can be beneficial to predict the osteoporotic fracture risk and not to go through catastrophic experience as severe pain and disability to individual sufferers.