Anabolics in Osteoporosis

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Although current antiresorptive treatments for osteoporosis reduce bone loss and decrease fracture risk, they are unable to reconstitute damaged microarchitecture or form new bone, leaving patients with severe osteoporosis at an ongoing risk for fracture. The new anabolic drugs increase bone formation, increase activation frequency and bone turnover, inducing significant microarchitectural changes in bone, with the creation of new bone structure. This is in contrast to anti-catabolic or antiresorptive agents which preserve bone structure and microarchitecture by decreasing bone resorption by osteoclasts.

Teriparatide

The human parathyroid hormone (PTH) has dual action in that continuously high PTH levels, as seen in individuals with hyperparathyroidism, are associated with decreases in bone density; however, intermittent PTH administration has been shown to stimulate bone formation and increase BMD. The latter effect is exploited by the anabolic agent teriparatide, which is a recombinant fragment of PTH.

Teriparatide has demonstrated significant reduction in the risk of vertebral and nonvertebral fractures, along with significant increases in BMD, as reported in the Fracture Prevention Trial (FPT). It has also shown increases in:

- trabecular connectivity,
- cortical thickness and
- bone size.

Of note, concurrent administration of bisphosphonates with teriparatide is not an optimal treatment paradigm; thus, sequential combinations (with PTH first) appear to be superior to concurrent therapy with the two agents.

Strontium ranelate

Strontium ranelate is a unique agent in that it is both anabolic and anti-catabolic. Clinical trial data have shown a decreased risk for fractures after one, three and five years of therapy with strontium ranelate.

Conclusion

Anabolic therapy represents a new and exciting era in the treatment of osteoporosis. New therapies are currently being developed and studies will be conducted to decide on the best way of combining anti-catabolic and anabolic therapies when this is necessary. Dx

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