NEW TREATMENTS IN OSTEOPOROSIS

TJ de Villiers

Panorama Medi Clinic, Cape Town, South Africa

Therapies for fracture prevention, presently available in South Africa, have mostly been discovered by chance. Dramatic progress has been made in the understanding of the mechanism and specific pathways controlling bone turnover. This has opened up numerous therapeutic targets for intervention to modify disease pathophysiology. Advances in biotechnology have enabled researchers to target specific pathways with great success.

This is illustrated by the development of denosumab, a monoclonal antibody against RANKL. Denosumab is approved for the treatment of osteoporosis in most parts of the world.

Denosumab binds to RANKL and thus inhibits osteoclast activation with resultant inhibition of bone resorption. Denosumab significantly increases bone mineral density (BMD) and a lowers risk of vertebral, non-vertebral, and hip fractures for up to 8 years. It will hopefully soon be approved in South Africa.

Odanacatib is a selective inhibitor of cathepsin K. Cathepsin K is the primary protease in the osteoclast involved in the degradation of organic bone matrix. Odanacatib is given as an oral weekly drug. A phase 3 placebo controlled clinical trial has shown significant reduction in vertebral, non-vertebral, and hip fracture rates and regulatory filling for approval is eminent.
Romosozumab, an anti-sclerostin antibody leads to stimulation of the osteoblast with resultant anabolic effects on bone. Phase 2 trials have illustrated highly significant increases in BMD. Phase 3 fracture-trials are presently in progress.

Abaloparatide, a PTH-related peptide analog, has recently been shown not to be inferior to teriparatide in BMD gains and fracture reduction and may be clinically preferred because of convenience of dosing and lower cost.

Several other agents are currently in earlier phases of development.