



10. THE BONE IN THE ELDERLY

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Introduction. Bone remodeling is a complex phenomenon regulated by bone cells and enzymes implicated in bone metabolism.

Aim of study. The aim of the study was to describe the processes involved in bone remodeling during aging.

Methods and materials. We conducted an electronic literature search from 01.12.2020 to 01.12.2023 in PUBMED, Clarivate, Google Scholar, Science Citation Index and fulfilled the predefined requirements. Publications were included if they addressed in the title the keywords: remodeling, osteoporosis, bone turnover and telopeptides. Study quality was assessed using the study validation score developed by the investigators.

Results. A total of 99 publications were analyzed, of which 20 were studies, 25- articles and 26 abstracts, at the same time 28 were eliminated. Out of 71 only 56 met all the criteria for inclusion in the study. Evidence suggests that some proteins are critical to the functioning of bone cells, including osteoblasts, osteocytes, and osteoclasts in the onset of osteoporosis - a loss of bone density among aging adults, but it's not part of the natural aging process. It is possible to prevent, delay or reduce bone loss. RANKL has been shown to regulate osteoclast activation both in normal and pathologic bone remodeling, characterized by increased bone turnover. Metalloproteinases and their inhibitors also regulate the resorption. Biochemical markers specific for bone formation include bone-specific phosphatase, osteocalcin, and type I procollagen N-terminal propeptide. Specific markers of bone resorption include pyridinoline cross links N-telopeptides, and C-telopeptides in urine and in serum.

Conclusion. It has been established that the aging process significantly decreases collagen content and affects matrix remodeling enzymes which correlates with reduced bone fracture resistance. Telopeptides should be evaluated for early diagnosis of osteoporosis.