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Title:	Immunoporosis: Role of Innate Immune Cells in Osteoporosis
Authors:	Saxena, Yogesh (/jspui/browse?type=author&value=Saxena%2C+Yogesh) Routh, Sanjeev (/jspui/browse?type=author&value=Routh%2C+Sanjeev) Mukhopadhyaya, Arunika (/jspui/browse?type=author&value=Mukhopadhyaya%2C+Arunika)
Keywords:	Immunoporosis Immune Cells
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Citation:	Frontiers in Immunology, 12.
Abstract:	<p>Osteoporosis or porous bone disorder is the result of an imbalance in an otherwise highly balanced physiological process known as 'bone remodeling'. The immune system is intricately involved in bone physiology as well as pathologies. Inflammatory diseases are often correlated with osteoporosis. Inflammatory mediators such as reactive oxygen species (ROS), and pro-inflammatory cytokines and chemokines directly or indirectly act on the bone cells and play a role in the pathogenesis of osteoporosis. Recently, Srivastava et al. (Srivastava RK, Dar HY, Mishra PK. Immunoporosis: Immunology of Osteoporosis-Role of T Cells. Frontiers in immunology. 2018;9:657) have coined the term "immunoporosis" to emphasize the role of immune cells in the pathology of osteoporosis. Accumulated pieces of evidence suggest both innate and adaptive immune cells contribute to osteoporosis. However, innate cells are the major effectors of inflammation. They sense various triggers to inflammation such as pathogen-associated molecular patterns (PAMPs), damage-associated molecular patterns (DAMPs), cellular stress, etc., thus producing pro-inflammatory mediators that play a critical role in the pathogenesis of osteoporosis. In this review, we have discussed the role of the innate immune cells in great detail and divided these cells into different sections in a systemic manner. In the beginning, we talked about cells of the myeloid lineage, including macrophages, monocytes, and dendritic cells. This group of cells explicitly influences the skeletal system by the action of production of pro-inflammatory cytokines and can transdifferentiate into osteoclast. Other cells of the myeloid lineage, such as neutrophils, eosinophils, and mast cells, largely impact osteoporosis via the production of pro-inflammatory cytokines. Further, we talked about the cells of the lymphoid lineage, including natural killer cells and innate lymphoid cells, which share innate-like properties and play a role in osteoporosis. In addition to various innate immune cells, we also discussed the impact of classical pro-inflammatory cytokines on osteoporosis. We also highlighted the studies regarding the impact of physiological and metabolic changes in the body, which results in chronic inflammatory conditions such as ageing, ultimately triggering osteoporosis.</p>
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