Holzer. J Rheum Dis Treat 2015, 1:1
ISSN: 2469-5726

Journal of
Rheumatic Diseases and Treatment

Editorial: Open Access

Subchondral Bone: An Emerging Target for Treatment of Osteoarthritis

Lukas A. Holzer*

Department of Orthopaedic Surgery, Medical University of Graz, Austria

***Corresponding author:** *Lukas A. Holzer, MD, Department of Orthopaedic Surgery, Medical University of Graz, Auenbruggerplatz 5, 8036 Graz, Austria, Email: lukas.holzer@medunigraz.at*

Osteoarthritis (OA) is a long-term chronic disease that is characterized by the deterioration of cartilage in joints resulting in stiffness, pain and impaired range of motion. OA is a disease that is associated with ageing. However, there are various factors e.g. obesity, lack of exercise, genetical abberations, occupation, trauma and gender that contribute to progression of OA [1].

OA is the most common form of arthritis [1,2]. The World Health Organization estimates that globally 25% of adults over the age of 65 years have clinically symptomatic osteoarthritis of any joint [2]. It ranks fourth in health impact in women and eighth in men in the civilized western world. OA ranks second only to cardiovascular disease as a cause of disability (e.g. walking or stair climbing) [1,2]. OA affects patients and health care systems worldwide. Due to the socio-demographic changes in the civilized western world preventive measures are becoming increasingly important [2].

In recent years the role of subchondral bone in the progression of OA has been studied intensively. It seems that subchondral bone and cartilage are a functional unit in which structural changes in one tissue will affect the other and vice versa. Therefore the subchondral bone might be a potential target for future treatment of osteoarthritis [3].

A disease-modifying osteoarthritis drugs slows the progression of OA and improves symptoms and/or function [4]. This group of drugs includes agents that are commonly used for the treatment of osteoporosis such as antiresorptive drugs (estrogens, SERMs and bisphosphonates), anabolic drugs (such as parathormone/teriparatide) or drugs with a dual mechanism (strontium ranelate) [4]. Of these medications especially strontium ranelate and bisphosphonates showed promising results on OA progression and subchondral bone changes in experimental and clinical settings [5].

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Citation: Holzer LA (2015) Subchondral Bone: An Emerging Target for Treatment of Osteoarthritis. J Rheum Dis Treat 1:001e

Received: February 10, 2015: **Accepted:** February 12, 2015: **Published:** February 15, 2015