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Course tittle; Introduction to histopathology

Assignment; Discuss the involvement of T and B lymphocytes in the pathogenesis and progression of osteomyelitis and osteoarthritis.

What is Arthritis?

**Arthritis** is a joint inflammation of one or more joints, causing pain and stiffness that can worsen with age.

**Osteoarthritis** A type of arthritis that occurs when flexible tissue at the ends of bones wears down.

The wearing down of the protective tissue at the ends of bones (cartilage) occurs gradually and worsens over time

**Osteomyelitis** is an infection of the bone, a rare but serious condition. Bones can become infected in a number of ways: Infection in one part of the body may spread through the bloodstream into the bone, or an open fracture or surgery may expose the bone to infection.

Joint pain in the hands, neck, lower back, knees or hips is the most.

**T lymphocytes** are part of the immune system and develop from stem **cells** in the bone marrow. They help protect the body from infection.

 **B lymphocytes**, are a type of white blood **cell** of the **lymphocyte** subtype.

The T and B lymphocyte during Osteomyelitis an infection enters the blood and it travels to the bone or an infection affects the bone the white blood cells (macrophages, neutrophil and mask cells) fights and engulfs the antigen(Lewand Waldvogel, 2004), the T lymphocyte will destroy the antigen . HOW? The dendrite cell takes the antigen and produces more and more to trap other diseases the process of increasing division will lead to inflammation, for the B lymphocyte the get antigen preventing cells , it produces few B cells and more antibodies , the antibodies help fight the antigens leading to inflammation.

The T and B lymphocyte during Osteoarthritis, the major difference is that it causes pain and it affects the synovial fluid and bursae, it can cause stiffness, it could be hereditary and can be caused by an injury, obesity etc.

majority of patients with advanced OA, T and B cells infiltrating the synovial membrane express early activation antigens (CD69), intermediate activation antigens (CD25, CD38), and late activation antigens (CD45RO, HLA class II) . These activation antigens were expressed on T cells and other MNCs infiltrating the synovial membrane of both patients with OA and patients with RA(Glyn-Jones *et al .*,2015) although their proportions were significantly higher in patients with RA than in those with OA. Although it could be argued that CD45RO+ T and B cells may extravasate from peripheral blood, the expression of CD69, an early activation antigen, suggests that activation occurs in situ, in the synovial membrane. CD38 and the CD43, which are detected in the synovial membrane of patients with OA ( Jasin, 1985), mediate adhesion to vascular endothelium and binding to intercellular adhesion molecule 1 (ICAM‐1), respectively. Leukocytes and endothelial adhesion molecules are also expressed in the synovial membrane of patients with OA, although to a lesser degree than in patients with RA

Refrences

Glyn-Jones, S., Palmer, A. J. R., Agricola, R., Price, A. J., Vincent, T. L., Weinans, H., & Carr, A. J. (2015). Osteoarthritis. *The Lancet*, *386*(9991), 376-387.

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