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AETIOLOGY AND PATHOLOGY OF OSTEOMYELITIS

An Essay
Submitted for partial Fulfilment of
Master Degree in Orthopaedics

By

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بسم الله الرحمن الرحيم

"إقرأ بإسم ربك الذي خلق (١) خلق الإنسان من علق (٢) إقرأ وربك الأكرم (٣) الذي علم بالقلم (٤) علم الإنسان ما لم يعلم (٥)".

صدق الله العظيم

(العلق ... ١-٥)

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Khaled Farouk

TO MY WIFE
& MY PARENTS

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INTRODUCTION

INTRODUCTION

Osteomyelitis is an inflammation of bone caused by an infecting organism. It may remain localized, or it may spread through the bone to involve the marrow, cortex, periosteum, and soft tissue surrounding the bone. Fifty years ago about 20% of patients with osteomyelitis died and those who survived had significant morbidity. with the advent of antibiotics and more sophisticated treatment techniques, the risk of death is negligible and the complication rate is about 5%. even with this improved prognosis however, an established infection remains one of the most challenging problems for the orthopaedic surgeons (Crenshew, 1992).

The term osteomyelitis, taken literally, implies inflammation of bone and its marrow regardless of whether it is due to pyogenic organisms, tuberculosis, syphilis, a specific virus, or the presence of foreign body such as shrapnel. However, universal acceptance of the term is applied to infection by pyogenic bacteria, less commonly to granulomatous inflammation of tuberculosis and syphilis. The infection involves the

marrow spaces, the Haversian canals, and the subperiosteal space. The bone is involved secondarily. It is destroyed by proteolytic enzymes, necrosed by obliteration of blood supply, decalcified by inactivity and hyperemia, actively resorbed by osteoclasts, and actively reconstructed by osteoblasts (Turek, 1984)

Bacterial infection of bone occurs under different circumstances. In any blood borne systemic disease, such as brucellosis, typhoid fever, mycosis, tuberculosis, and bacterial endocarditis, the bone marrow may be seeded with organisms to produce small foci of infection. Usually these inflammatory lesions are of microscopic size, don't contribute materially to the clinical disease, and are of significance only as anatomic findings that aid in establishing the nature of the primary systemic disease. However, in addition to these insignificant lesion, more serious bacterial infections occur in bone. Both the bone marrow and bone are often affected concomitantly to produce an osteomyelitis. The three most serious infections of bone are :

1) Pyogenic osteomyelitis.

2) Tuberculosis.

3) Syphilis. *(Robbins et al., 1984)*

AETIOLOGY

AETIOLOGY OF OSTEOMYELITIS

This infection is the presence within or invasion of tissues by special pathogenic bacteria or organisms particularly when these organisms are capable of invading and multiplying in the human body to produce their effects.

Entrance to the body is gained through a defect in protective tissues, with the survival of the organisms depending upon their ability to gain further access to lymphatic and subepithelial tissues.

If bacteria circulate even although without associated clinical manifestations, a bacteraemia results, and if there is a favorable host response, the reticuloendothelial system will localize and destroy the organisms.

If the infection becomes diffuse, however, a septicaemia may result. This implies that organisms as well as their toxins are present within the blood stream *(Mercer's, 1983).*