Idiopathic Aseptic Necrosis of The Head of The Femur

ESSAY

Submitted In Partial Fullfillment

For The Master Degree in Orthopaedics

By

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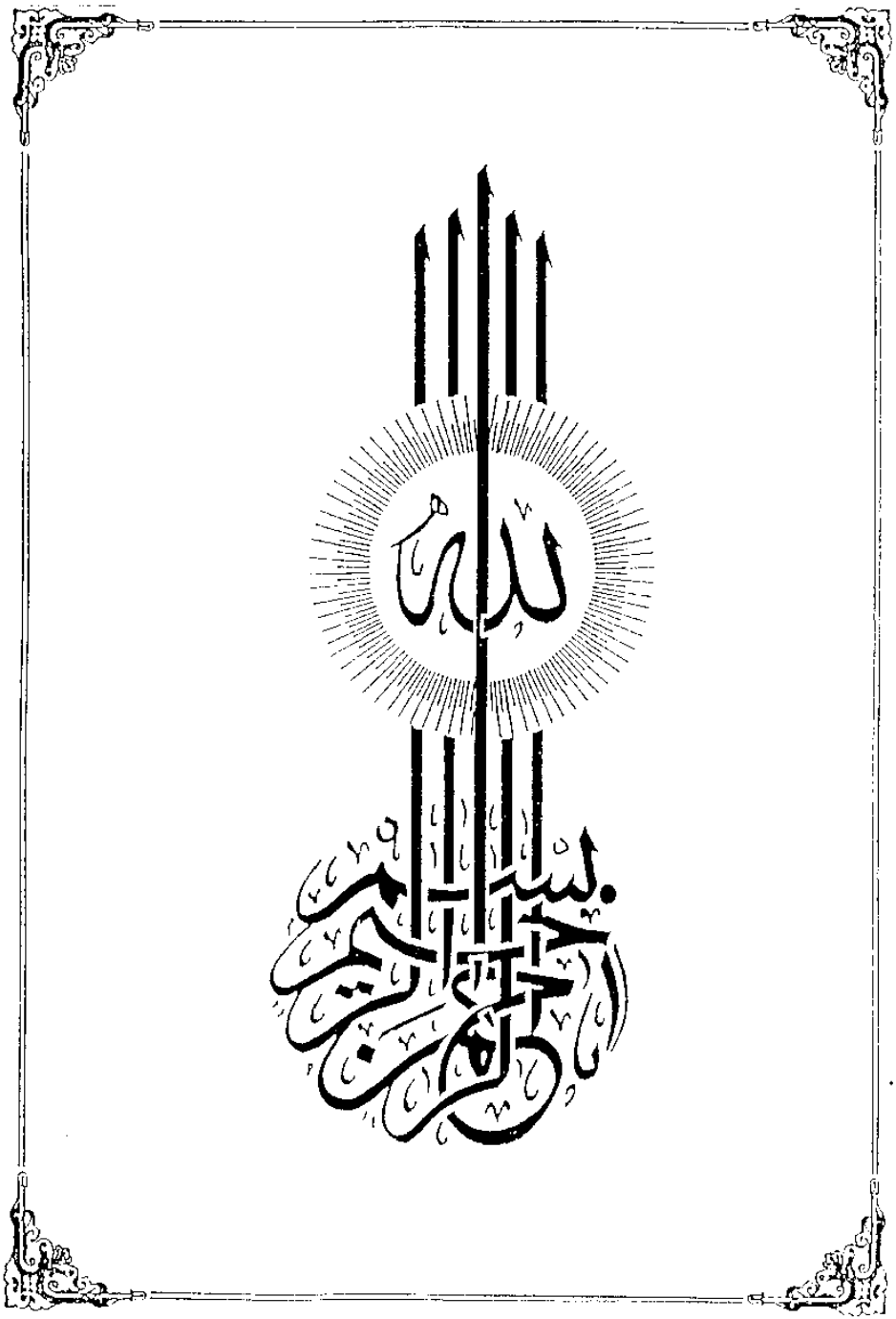

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M.W.

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INTRODUCTION

DEFINITIONS

INTRODUCTION

Aseptic necrosis of bone may arise in a variety of different clinical circumstances.The most noteable of these are trauma, haemoglobinopathies, dysbaric disease and idiopathic group.

The term idiopathic aseptic necrosis is unsatisfactory, but will suffice the absence of defenitive aetiological basis. It appears that a number of apparently unrelated conditions can induce pathological processes in bone which final common pathway is aseptic necrosis. Once developed, there will be characteristic radiological features of sequelae of bone death but not to differentiate contributory aetiological factors.

These grat contributory factors, as irradiation, thermal damage and haemophilia, many associate features like alcoholism, gout, diabetes melliteus and systemic lupus erythematosus.

The condition becomes increasingly common. Patients may consult their clinicans or general practitioners for painful arthritis in the hip region but the subsequent history reveals alcoholism, gout, blood diseases, and diabetes mellitus.Based on the evidences of these contributory factors we regard femoral head necrosis as a skeletal expression of systemic disease which by constellation of events alters coagulation haemostasis resulting sludging, thrombosis or haemorrhage in an area of suceptible blood supply.

Histological confirmation of the condition may be difficult to obtain when it is suspected at early stages. The introduction of the new orthopaedic replacement techniques is likely contributes little to our understanding of aetiology. By the time; damaged joints are replaced, primary pathological process is much modified by secondary changes.

There are three reasons, why idiopathic necrosis of the femoral head is of particular medical and scientific interst.

First; the incidence of this condition has increased in recent years, particularly among young people in their 30_s & 40_s.

Second; unless diagnosed early, the disease always causes destruction of hip joint.

Third ; idiopathic necrosis of the femoral head tends to be bilateral, a downright catastrophic complication.

DEFINTIONS.

ASEPTIC NECROSIS OF BONE :

This means a segment of bone has lost its blood supply and died. Similar terms are osteonecrosis or avascular necrosis of bone. The term aseptic means that infection is not present.

IDIOPATHIC ASEPTIC NECROSTS OF THE FEMORAL HEAD:

This condition characterized by the development of small wedge - shaped area of necrosis of bone immediately subjacent to the intact articular cartilagenous covering and situated at the superior weight - bearing portion of the femoral head.

INCREASED DENSITY:

This implies that an area of bone is more dense than the surrounding structure. Similar terms are increased radiodensity or sclerosis.

DECREASED DENSITY :

The opposite applies , in that the area of bone is less dense than the surrounding structure.

Similar terms would be increased radiotranslucency, rarefaction , Porosis, translucency or radiolucency .

AETIOLOGY

ITEMS OF THE AETIOLOGY

(1) ACCEPTED CONTRIBUTORY FACTORS:

A) Disease of haemopoietic System.

1- Haemophilia

2- Polycythemia rubra vara

B) Post - irradiation necrosis.

C) Thermal damage.

(2) COMMONLY ASSOCIATED FACTORS:

1- Alcoholism.

2- Gout & hyperuricaemia.

3- Disorders of fat metabolism.

4- Systemic Lupus erythematosus.

5- Diabetes mellitus & hyperglycaemia.

6- Congenital anomaly.

7- Arthropathy.

8- altered haemostasis.

(3) INFREQUENTLY ASSOCIATED FACTORS:

1- Microtrauma.

2- Iorn intoxication.

AETIOLOGY .

The term idiopathic aseptic necrosis is unsatisfactory but it denotes absence of definitive aetiological basis. It appears that a number of apparently unelated conditions can induce pathological processes in bone which final common pathway is aseptic necrosis. Lagier, (1971) concluded that the idiopathic aseptic necrosis at least in most cases, does not appear, at an early stages due to a decrease of blood flow in an individualized vascular territory.

The group of idiopathic aseptic necrosis excluding the most noteable causes that induce aseptic necrosis such as trauma,work in compressed air, sickle cell disease or Gaucher's disease . Recently steriod (Smyth & Leidholt, 1973), alcohol(Leach & Baskies, 1973) or drug - related necrosis (Solmon, 1973)has also tended to be seperated from it . A most striking feature of this condition is the frequency these patients are found to be suffering from other diseases.Zinn, (1971) reported in his Long series (50 patients) with idiopathic femoral head necrosis, only 3 patients were completely healthy and free from associated disease at the onset of symptoms.

It is not immediatly clear whether these widely diverging conditions produce ischaemia in bone directly,or act like a trigger mechanism in susceptible patients. It may necessary assume that a combination of circumstances coincide collectively and produce infarction , this permits some factors to be present in isolation without necessarily producing the consequences

of necrosis.(Park, W.M., 1976).

By taking the frequency and significance of this association , it is possible to discuss this group under the following seperate headings.

(1) ACCEPTED CONTRIBUTORY FACTORS:

(A) DISEASES OF THE HAEMOPOITIC SYSTEM:

1- HAEMOPHILIA:

It is the most common group of bleeding disorders. It is a recessive sex-linked disorder due to a defect of factor VIII in the plasma, Less commom is due to defect in factor IX(christmas disease).

It has been suggested that frequent haemarthrosis may rise intra-articular pressure sufficintly to interfere with vascular drainge from the femoral head, thus producing a form of venous infarction.(Park , W.M., 1976).

2- POLYCYTHAEMIA RUBRA VARA:

It is a myeloproliferative disorder affect usually middle age group of patients, more common in men than women.

It produces vascular thrombosis, it affects the skeleton but the head of the femur is the most area affected.

(Murry & Jacobson, 1971).

(B)POST- IRRADIATION NECROSIS:

In radiotherapy, all cellular elements lying within the primary beam are liable to undergo transformation or necrosis.

(Park, 1976).

The severity of the injury depends on many variables such as type of irradiation, accumulated dose and regimen of administration.(catto,1976). Also it is infeluenced by age,individual susceptiblity and other general biological factors.

(Vaughan, 1971)

The haemopoietic cells of the marrow is the most sensitive area in the bone, osteocytes and osteoctasts are the least affected while osteoblasts, chondroblasts and cells forming blood vessel walls hold an intermediate Position.(Catto; 1976) .

Bone damage by irradiation accurately described by Vaughan, (1956) as radiation osteodysplasia.

The hip region is the common site for post-irradiation necrosis following therapy for carcinoma of Cervix & uterus.

(Park , 1976).

(C) THERMAL DAMAGE:

ELECTRICAL INJURY:

Extensive soft tissue injury could be caused by high

oltage electricity as a result of the direct and thermal effcts of the current. Bones affected by the current usually lies irectly in its path, but sometimes necrosis occurs some distance away from the point of entry of electrical source(Barber,1971).

ROSTBITE:
Fingers & toes are most liable to involvement by rostbite. Sever injury damages in soft tissues may produce ecrosis of underlying bone (Park , 1976) .

KIN BURNS:
Bone necrosis may complicate full thickness in burns of skin (Park , 1976).

(2) COMMONLY ASSOCIATED FACTORS:

1- ALCOHOLISM:-

Alcoholism is one of the most frequent condition in association with idiopathic aseptic necrosis of the bone.

The incidence in patients suffering from idiopathic femoral head necrosis is variable, it was 17% in groups of 52 patients (patterson et al. , 1964; Zinn, 1971) & 74 % reported by Beettcher et al ., (1970) , But Casey et al., (1980) reported that 22patients in his group of 42 adult men had history of chronic alcoholism.

The real cause that renders alcohlics to be susceptible to bone necrosis is uncertain, but they are liable to