ORTHOPAEDICS

FOR PRIMARY HEALTH CARE

LION
LEARNING INNOVATION VIA ORTHOPAEDIC NETWORKS

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HIV in orthopaedic patients

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Learning objectives

1. Identify common musculoskeletal conditions in HIV patients.
2. Diagnose and manage complications related to HIV and ARVs.
3. Understand the indications for surgical management and urgent referral.

Introduction

Human Immunodeficiency Virus (HIV) is a retrovirus that targets CD4+ T cells, specifically affecting humoral immunity in our immune system. Without treatment, the infection advances with CD4+ T cells falling below a certain level and resultant susceptibility to HIV complications and opportunistic infections. Since the introduction of antiretroviral (ARV) agents, HIV- infected patients now live normal lives and have a life expectancy comparable to people without HIV.

How HIV affects orthopaedic surgery

- Specific musculoskeletal conditions are associated with HIV and its treatment
- Perioperative optimisation needs to be implemented in HIV-positive patients
- There is a risk to healthcare workers from blood exposure

Implant-associated infections

There is no clear evidence that HIV infection increases implant-related infections. However, there is some evidence showing an increased infection rate with orthopaedic implants in HIV+ve individuals with low CD4+ counts and open fractures.

TB osteomyelitis and septic arthritis

The spine is the most common site of involvement. Joints are more commonly involved than bones.

Non-tuberculosis osteomyelitis:

The bacteriology of osteomyelitis includes the same causative organisms as in HIV-ve individuals. Fungi are rare causes of osteomyelitis in HIV+ve individuals.

Septic arthritis: Bacterial and atypical organisms are causative.

Avascular necrosis / osteonecrosis

The femoral head is the most common site of involvement. Both the HI virus and ARV therapy have been implicated.

The incidence is 4% in the HIV+ve population, and 35–80% have bilateral involvement.

Other risk factors to be excluded are alcohol, oral corticosteroids, hyperlipidaemia, coagulopathies, smoking, chemotherapy, trauma and inflammatory arthropathies.

Decreased bone mineral density (BMD)
HIV+ve individuals have an increased risk of decreased BMD and bone mass. The HI virus and ARVs are both involved, Tenofovir being most implicated.

HIV associated arthropathies

- Primary HIV arthropathy

Transient (symptom duration < six weeks); single joint involvement (lower limbs). X-ray shows non-erosive lesions. A joint aspiration reveals a non-inflammatory process. The treatment is symptomatic (analgesia, NSAIDS and intra-articular corticosteroids).

- Seronegative spondyloarthropathies

Psoriatic arthritis and reactive arthritis are more common in HIV-infected patients.

Myopathies

Muscle pain is a common problem in HIV patients. ARV therapy is associated with weakness, myalgia and myopathy.

Infectious pyomyositis

This is a common complication of advanced HIV disease. Staphylococcus Aureus is the most common causative organism. Patients present with a painful, swollen limb and muscles and systemic features of infection. Investigations should include blood cultures, FBC, CRP and creatinine kinase levels. An MRI scan is most useful (enhanced fluid collections), contrasted CT is an alternative. Early diagnosis is crucial for treatment and aggressive management with intravenous antibiotics should be started along with incision and drainage of any collections.

Primary/non-infectious myositis

Patients present with proximal muscle weakness that is often symmetrical.

Neoplasms

Certain neoplasms have an increased incidence in HIV+ve individuals.

Non-Hodgkin's lymphoma

A neoplasm of lymphoid cells predominantly involving the axial skeleton with a 60 times higher risk in the HIV population.

Kaposi's sarcoma (KS)

KS is the most common HIV associated malignancy. It rarely involves the musculoskeletal system.

Perioperative optimisation

The issues of concern are the influence of HIV on the outcome and treatment of polytrauma, open and closed fractures and elective surgery such as total joint replacements. HIV does not preclude patients from undergoing elective surgery. A lot of the published research is based on individuals not receiving antiretroviral therapy, and more information would be available in future.

Potential perioperative complications in HIV positive individuals:

- Polytrauma: Higher risk of pulmonary, renal and infective complications.
- Implant sepsis (see earlier comments)
- Delayed or non-union of fracture: No proven increased risk.

HIV-positive individuals also more likely to have other risk factors for poor surgical outcomes, such as:
- Malnutrition
- Other opportunistic infections

Any patient undergoing surgery in a high prevalence area (such as South Africa) should be encouraged to undergo an HIV test.
Any HIV-positive individual undergoing elective surgery should have an adequate workup, including:
- CD4+ count and viral load:
Caution is advised with the use of orthopaedic
implants in patients with low CD4+ counts and high viral loads.
- Nutrition: Test and optimise.
- Screening for opportunistic infections (particularly TB).

Risk to healthcare workers

Occupational exposure to HIV is a risk to healthcare workers. Orthopaedic surgery carries a high risk of exposure to blood when treating open wounds and in the operating theatre. Contact precautions must always be used when in contact with bodily fluids of patients. When
exposure occurs, post-exposure prophylaxis (PEP) should be initiated immediately until the patient's HIV status is known. With PEP, the risk of seroconversion from occupational exposure is minimal.

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ABOUT THE BOOK

Informed by experts: Most patients with orthopaedic pathology in low to middle-income countries are treated by non-specialists. This book was based on a modified Delphi consensus study* with experts from Africa, Europe, and North America to provide guidance to these health care workers. Knowledge topics, skills, and cases concerning orthopaedic trauma and infection were prioritised. Acute primary care for fractures and dislocations ranked high.

Furthermore, the diagnosis and the treatment of conditions not requiring specialist referral were prioritised.

* Held et al. Topics, Skills, and Cases for an Undergraduate Musculoskeletal Curriculum in Southern Africa: A Consensus from Local and International Experts. JBJS. 2020 Feb 5;102(3):e10.

THE LION

The Learning Innovation via Orthopaedic Network (LION) aims to improve learning and teaching in orthopaedics in Southern Africa and around the world. These authors have contributed the individual chapters and are mostly orthopaedic surgeons and trainees in Southern Africa who have experience with local orthopaedic pathology and treatment modalities but also in medical education of undergraduate students and primary care physicians. To centre this book around our students, iterative rounds of revising and updating the individual chapters are ongoing, to eliminate expert blind spots and create transformation of knowledge.

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