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Ain Shams University
Faculty of Medicine

**FORMS OF INSTABILITY OF CERVICAL
SPINE IN RHEUMATOID ARTHRITIS**

Essay

**SUBMITTED FOR PARTIAL FULFILLMENT
OF MASTER ORTHOPEDIC SURGERY**

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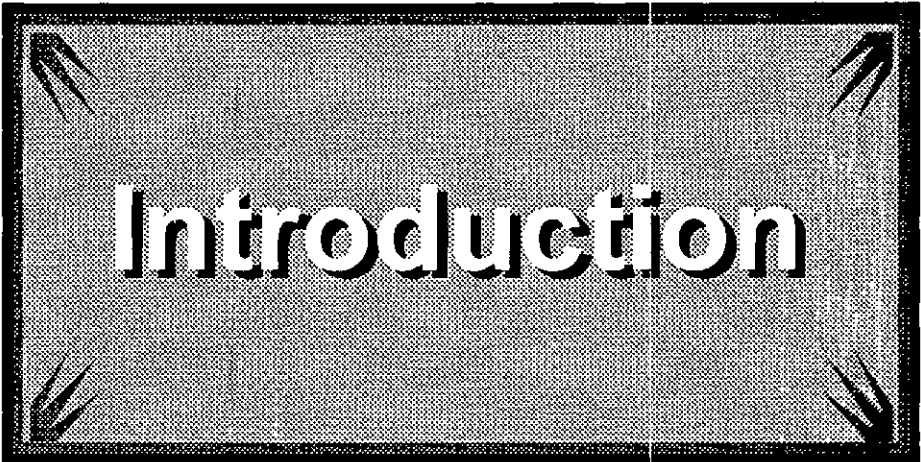
وَمَا أُوتِيتُمْ مِنَ الْعِلْمِ إِلَّا قَلِيلًا

صدق الله العظيم

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Introduction

Introduction

Rheumatoid Arthritis is a chronic progressive inflammatory arthritis of unknown origin involving multiple joints and characterized by a tendency to spontaneous remissions and subsequent relapses.

The rheumatoid arthritis most often affects the cervical spine, resulting in clinical and radiological findings.

For most patients with rheumatoid arthritis, the cervical involvement represents a relatively benign process, but, in a small percentage of these patients, a progressive instability pattern develops that may compromise neural or vascular structures.

The clinical manifestation may be radiculopathy, myelopathy, quadriplegia, and in extreme instances, sudden death.

(Seifert, 1983).

We will discuss in this essay in details, the pathological changes affecting the cervical spine, the role of radiological uses in the diagnosis. The methods of conservative, surgical treatments, its benefits, and prognosis will be outlined.



Pathoanatomy

Chapter (1)

Pathoanatomy

I- ANATOMY OF THE CERVICAL SPINE :

The Stability Of The Cervical Spine :

The cervical spine is made up of the seven cervical vertebrae. Functionally, it is divided into two areas : the articulations between the occiput, atlas, and axis, and the articulations between the third through seventh cervical vertebrae.

Occipitoatlantal Joint :

The occipitoatlantal articulation consists of the superior articular facets of the atlas and the two occipital condyles. The superior facets of the atlas face backward, upward, and medially and are concave in both anteroposterior and transverse diameters. The surfaces of the occipital condyles match the facets of the atlas, and the joint is best thought of as a sphere (the occiput) gliding on the articular surfaces of the atlas.

Fig. (1-1).

The freely movable occiput is limited by its muscular and ligamentous attachments, which make flexion-extension the primary motion, producing a small-amplitude nodding of the head. Flexion of the occiput on the atlas is accompanied by a

posterior translatory slide of the occiput, extension is accompanied by an anterior translatory slide.

Side bending and rotation of the occipitoatlantal joint always occur in opposite directions, in part because of the lateral atlantooccipital ligament. When the occiput rotates left on the atlas, the lateral atlanto-occipital ligament causes the occiput to slide (translate) to the left and therefore side bend to the right. Fig. (1-2).

Somatic dysfunctions of the occipitoatlantal joint most often involve the minor motions of side bending and rotation.

(Fenton, 1991).

The ligaments of Occipitoatlantal Joint :

1) Anterior occipitoatlantal membrane :

It is upward continuation of anterior longitudinal ligament, connects the anterior arch of the atlas with the anterior margin of the foramen magnum.

2) Posterior Occipitoatlantal Membrane :

Connects the posterior arch of the atlas to the posterior margin of the foramen magnum.

(McMinn, 1994).

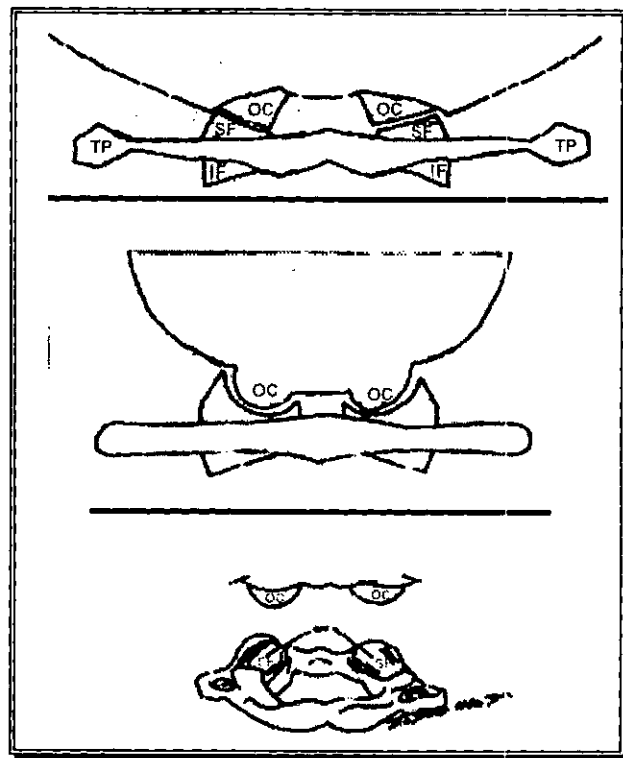


Figure (1-1) : Bony anatomy of the occipitoatlantal joint, posterosuperior view. OC, occipital condyle; SF, superior facet; IF, inferior facet; TP, transverse process.

(Fenton, 1991).

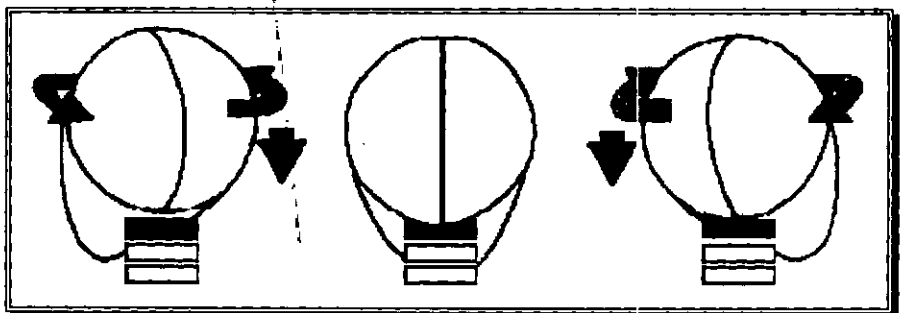


Figure (1-2) : Occipitoatlantal joint : side bending and rotation occur in opposite directions.

(Fenton, 1991).

Atlantoaxial Joint :

The atlantoaxial joint articulation is specially adapted for (early) pure rotation. In addition to the inferior articular facets of the atlas and the superior articular facets of the axis, movement other than rotation is limited by the anteriorly located, odontoid process (dens) of the axis. The odontoid process is held close to the anterior arch of the atlas by the transverse ligament of the atlas, which allows only a light amount of flexion of the atlas on the axis.

There is no true lateral flexion at the atlantoaxial joint, only a wobble created by the articulation of superior axial and inferior atlantal articular facets. Unlike most facets, these four facets are all convex in shape Fig. (1-3)

During rotation of the atlas on the axis to the right, the left articular facet of the atlas in effect slides uphill on the left articular facet of the axis, while on the right the atlas slides downhill on the axis. The wobble motion is not true lateral flexion. Somatic dysfunction at the atlantoaxial joint occurs in rotation.

(Fenton, 1991).