Prevalence of Cervical Spine Instability among Rheumatoid Arthritis Patients in South Iraq

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Extended Abstract

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Abstract:

Rheumatoid Arthritis (RA) is an autoimmune disease of unknown aetiology that primarily targets synovial tissues, cartilage and bone. RA is also the most common form of immune-mediated arthritis. Involvement of the cervical spine often follows the peripheral joints.The cervical spine is composed of two distinct parts, the upper cervical spine (CI and C2, with the atlantoaxial, atlantoodontoid, and atlantooccipital joints) and the lower cervical spine (C3 to C7, with the uncovertebral and facet joints at each level). Rotation of the neck occurs mainly in the upper cervical spine and flexion-extension in the lower cervical spine. Because they are extremely mobile, the various components of the cervical spine, particularly the occipitocervical junction, are subjected to considerable stress. The joints are stabilized by a large number of ligaments, including the transverse ligament, the alar ligaments, and the accessory atlantoaxial ligaments. The cervical spine can severely affect RA, but findings on the proportion of its involvement vary between different studies conducted on different populations (e.g., 30%, 30%-50% and 19%-88%). RA is the most frequently observed chronic inflammatory disease, affecting approximately 1% of the white population, with females affected 3 times more often than males.

The age at diagnosis is typically 30-50 years old, with the most serious and potentially lethal manifestation of RA being the instability of the upper cervical spine. Involvement of the cervical spine in patients with RA is associated with higher morbidity and mortality than similar cervical spine involvement in patients without RA. Therefore, in order to achieve better disease management and save the lives of more patients, greater awareness of the various pathologic processes that can affect the cervical spine is required. Atlantoaxial subluxation (AAS) is diagnosed based on the distance between the anterior arch of the atlas and odontoid process of the axis, with a distance of 3 mm or above being indicative of AAS. In most cases, AAS presents within two years of onset. There is a significant risk of myelopathy when the diameter between the posterior arch of the atlas and odontoid process of the axis is 14 mm or less. Patients with AAS typically complain of occipital headaches (Arnold's neuralgia, caused by compression in the greater occipital nerve). Further symptoms include the loss of sensory and motor functions in the limbs, along with neck stiffness, earache (caused by compression of the greater auricular nerve), abnormal gait, loss of balance, tinnitus (cause by changes in the vertebral artery flow), and vertigo. Lhermitte's sign, in which the patient feels a buzzing sensation similar to an electric shock shooting down the spine and often into the arms, legs, hands and feet, can present when bending the neck forwards.

Complications of AAS include chronic hydrocephalus, cerebral infarction, quadriparesis, and sudden death. Basilar invagination complications typically appear in more severe RA cases, often presenting at a later stage. Symptoms have been found to occur in 4-34% of RA patients. Here, compression of the brainstem can occur as a result of the odontoid process moving upwards. AAS can appear in 7-29% of cases and may be found to exist in isolation or across multiple points (resulting in a staircase-like abnormality which is characteristic of sub-axial subluxation). In an earlier study on 102 RA patients with AAS appearing within two years of disease onset, a connection between erosion of peripheral joints and AAS was determined. The study showed that these patients were predicted to experience diminished functional capacity over time. With this being said, RA progression has been delayed through early intervention in form of disease-modifying antirheumatic drugs (DMARDs) and anti-inflammation drugs. This can also impact the extent of cervical spine involvement in RA. It is anticipated that there could be a reduced prevalence of cervical involvement in RA through the adoption of such measures,

since early administration of DMARDs may hinder pannus growth. The purpose of this study was to establish the prevalence of cervical spine involvement in RA patients following at a single centre in Basrah in order to detect factors for early diagnosis in asymptomatic RA patients with cervical spine involvement. It is hoped that by achieving early diagnosis, disastrous irreversible neurological deficits can be avoided.