

Neck Instability from Rheumatoid Arthritis

What Happens To Patients with Neck Instability from Rheumatoid Arthritis?

When you think of someone with severe inflammatory rheumatoid arthritis (RA) what picture comes to mind? Knobby, gnarled hands is the first thought that many people associate with RA. Although RA seems to target the small joints of the hands and feet, in fact, it can affect any joint in the body.

In this report, orthopedic surgeons from the Kobe University School of Medicine in Japan discuss the natural history of rheumatoid arthritis (RA) affecting the cervical spine (neck). They followed a group of patients (267 total) over a period of five years to see what happens over time. They hoped to see if it's possible to predict who will develop cervical spine instability from RA.

Cervical spine instability is defined as movement, translation, or "slippage" of one cervical vertebra over the vertebra below it. Two other words used to describe this problem are translation and subluxation.

To form a true subluxation (partial dislocation), the vertebra has to slide at least two millimeters (as measured on X-rays). This measurement refers to the reducible difference.

In other words, when the bone is shifted and lined up as much as possible, there is still at least two millimeters of displacement. The shift can be in any direction (forward, backward, rotation, sideways). Most of the time, the displacement is anterior or forward.

Three types of cervical spine instabilities were studied: atlantoaxial subluxation (AAS), vertical subluxation (VS), and subaxial subluxation (SAS). The names were given based on the location or type of the displacement.

For example, the atlantoaxial (AO) joint is where the first cervical vertebra (C1 -- the one just under your skull) sits on top of the second cervical vertebra (C2). Displacement of C1 over C2 is referred to as atlantoaxial subluxation (location of subluxation).

Upward movement of C2 toward C1 (type of displacement) is what is meant by vertical subluxation (VS). Subaxial subluxation (SAS) refers to location (subluxation of any cervical vertebra below C1-C2).

Patients with these types of cervical instabilities often report head, neck, and/or arm pain. There may be numbness and tingling or an electric shock sensation (called Lhermitte sign) down the arms if there is pressure on the spinal cord. Muscle weakness and atrophy are further neurological signs observed with this problem. The diagnosis is made using X-rays to confirm the location and position of the vertebra.

By performing serial (repeated) X-rays, the authors were able to observe progression of disease over time. They compared erosive joint destruction of the fingers with changes in the cervical spine.

Analysis of the data showed that early signs of cervical instabilities and worsening of hand involvement were two predictive factors for progression of cervical spine instability. In particular, vertebral subluxation (VS) and subaxial subluxation (SAS) followed the same pathway of worsening observed in the hands. As the hands got worse, the neck got worse.

In summary, the authors of this study refer to cervical instabilities as the most serious problem associated with rheumatoid arthritis (RA). Understanding and preventing cervical instabilities in this patient population is extremely important. A sudden shift of the vertebra putting pressure on the spinal cord can cause difficulty breathing and even death.

By observing early changes (as seen on X-rays) in the neck and hands, it is possible to target patients most likely to develop cervical spine degeneration. Preventing the risks associated with this problem is a more attainable goal now with the new disease modifying antirheumatic drugs (DMARDs) and biologic agents currently available.

Reference: Takashi Yurube MD, et al. Progression of Cervical Spine Instabilities in Rheumatoid Arthritis. In *Spine*. April 15, 2011. Vol. 36. No. 8. Pp. 647-653.