ASSOCIATION CLINICAL-RADIOGRAPHIC OF THE ACROMION ÍNDEX AND THE LATERAL ACROMION ANGLE

Flavio Amado Hanciau[1], Marcos André Mendes da Silva[2], Felipe Silveira Martins[3], Alexandre Ogliari[3]

ABSTRACT

Objective: To evaluate the clinical-radiographic subacromial disease symptoms correlated with adaptation of the measure of lateral acromion angle and its respective measuring radiographic acromial index. Methods: In the period between october 2010 and february 2011 were evaluated 55 painful shoulders with Neer test and true anteroposterior radiography. Patients were divided into two groups, with Neer test positive and negative. The index measuring the acromion and the lateral acromion angle have been standardized, and compared using statistical averages of 0.7 and 75°, respectively. Results: The predominant symptom in the population, females (72.73%), age less than 59 years (62.5%) and dominant side (65.31%). The acromion index above 0.7 was found to be symptomatic in 66.67% and lateral acromion angle less than 75 ° in 82.61%. When associated methods, 62.5% had positive clinical ($p<0.083$). Conclusion: The determination of radiographic acromial index and the lateral acromion angle together seem to be statistically associated with the disease of subacromial impingement.

Keywords – Shoulder; Acromion/radiography; Acromioclavicular Joint

INTRODUCTION

The morphology of the acromion has been considered the main cause of subacromial disease (impingement syndrome, tendinitis and cuff rotator injuries)[1-3]. Its differential diagnosis is of fundamental importance in the assessment of shoulder pathologies (glenohumeral instability, cervical radiculopathy, calcific tendinitis, adhesive capsulitis, isolated acromioclavicular joint pathology, osteoarthritis, and nerve compressions[4].

Bigliani et al[5] described the existence of three forms of acromion (flat, curved and hooked), associating the morphology found in the lateral radiographic view with the prevalence of subacromial disease (Figure 1).

The assessment of the lateral extension of the acromion causing subacromial impingement with consequent rotator cuff lesion was first reported by Nyffeler et al.[6], who found a radiographic index that determined a resulting force responsible for the subacromial impingement. This index is determined by the lines in true anteroposterior radiographic view of the shoulder, through the GA/GU relation (distance between the joint surface of the glenoid and the lateral border of the acromion, divided by the distance between the glenoid and the lateral border of the greater tubercle) (Figure 2).

The vector resulting from the force originates in the lateral projection of the acromion which, in turn, is related to the deltoid insertion, causing the humeral head to rise up and impinge against the subacromial surface during abduction of the upper limb (Figure 3)[6-8]. The greater the lateral projection of the acromion, the higher the acromial index will be, and consequently, the greater the likelihood of the occurrence of impingement syndrome[6].

Banas et al[9] reported the association of the angle of lateral tilt of the acromion with higher prevalence of subacromial disease. They determined, through

1 – Coordinator, Medical Residency Service in Orthopedics and Traumatology, Hospital Universitário Dr. Miguel Riet Corrêa Junior (HU/FURG) – Rio Grande, RS, Brazil.
2 – Orthopedist, Shoulder Group, HU/FURG – Rio Grande, RS, Brazil.
3 – Resident Doctor, Orthopedics and Traumatology, HU/FURG – Rio Grande, RS, Brazil.
Study conducted at the Hospital Universitário Dr Miguel Riet Corrêa Junior – Trauma Center – Rio Grande, RS.
Correspondence: Rua Visconde de Paranaguá,102, Bairro Centro –96200-190 – Rio Grande, RS. Email: fhanciau@mikrus.com.br
Received for publication: 10/10/2011, accepted for publication: 2/3/2012.

The authors declare that there was no conflict of interest in conducting this work

This article is available online in Portuguese and English at the websites: www.rbo.org.br and www.scielo.br/rbort

Rev Bras Ortop. 2012;47(6):730-5

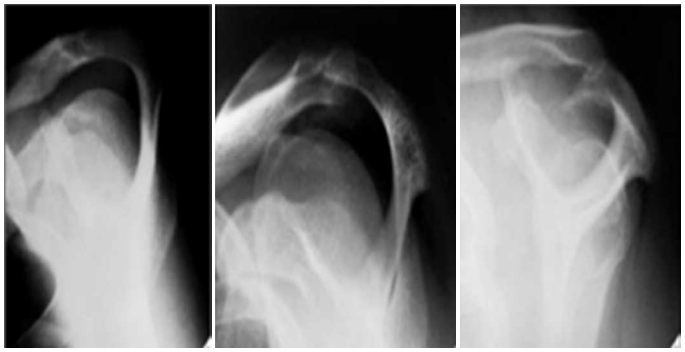

Figure 1 – Outlet (lateral) view of the acromion[5].

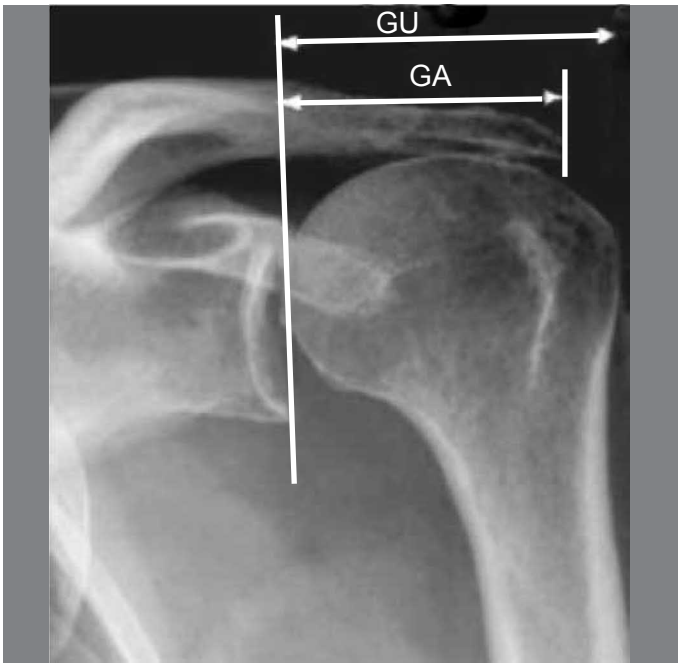

Figure 2 – Measurement of the acromial index. AI = GA/GU[7].

oblique coronal sections in magnetic resonance imaging (MRI), that the smaller the angle, the greater the lateral tilt of the acromion, and consequently, the greater the impingement (Figure 4).

The lateral tilt of the acromion is obtained based on lines drawn on the image, between the subacromial surface and the joint surface of the glenoid cavity[9].

We sought to evaluate the clinical and radiological profile of patients seen in the shoulder outpatient clinic, correlating the signs and symptoms of subacromial disease (positive Neer test) with adaptation of the measurement of lateral tilt of the acromion to a radiographic measurement and its respective acromial index.

MATERIALS AND METHODS

We analyzed radiographs in true anteroposterior view of the shoulders of 88 patients treated at the

Figure 3 – Resulting force with ascension of the humeral head and probable subsequent impact. The lateral projection of the acromion will determine the acromial index[6-7].

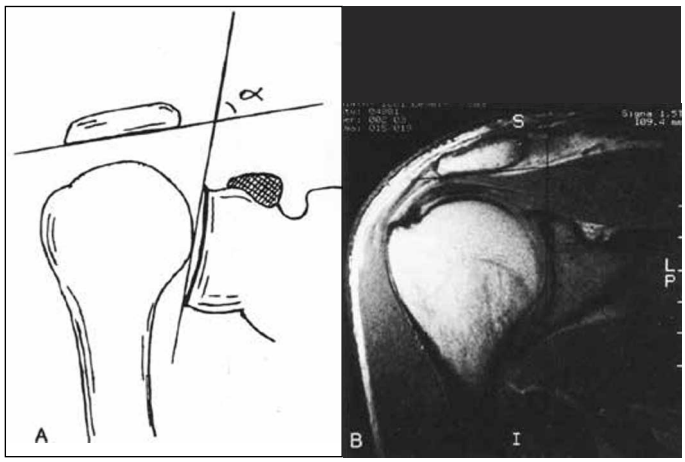

Figure 4 – Relationship between the angle of lateral tilt of the acromion and rotator cuff injury in MRI[9].

shoulder outpatient clinic of the Hospital Universitário Dr. Miguel Riet Corrêa Junior, of the Universidade Federal do Rio Grande – RS (HU/FURG), in the period October 2010 to February 2011. The patients had shoulder pain, without previous diagnosed pathology.

Patients with a previous diagnosis of the following were excluded: osteoarthritis, uni- or multidirectional instability, cuff rotator arthropathy, adhesive capsulitis, viscous consolidations of the shoulder girdle, symptomatic acromioclavicular joint problems, cervical radiculopathy, calcific tendonitis, and nerve compression. After the exclusion, 45 patients remained, 55