An examination of shoulder pain using magnetic resonance imaging (MRI) in older people

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Introduction

Shoulder pain is a common problem in the general population with 27.5% of participants aged 55 years and over in the North West Adelaide Health Study (NWAHS) reporting that they had previously had shoulder pain. Magnetic Resonance Imaging (MRI) is increasingly being used in shoulder pain assessment and is a significant cost burden on the health care system. But the cause of shoulder pain in many patients with shoulder pain is poorly understood. The prevalence of pathology has been shown to be high. This pilot study aimed to determine if the pathology demonstrated on shoulder MRI correlates with participants' reports of pain.

Methods

Thirty participants were recruited from the NWAHS, a cohort study in the northern and western suburbs of Adelaide. There have been three stages of data collection: 2000-2003 (Stage 1), 2004-2006 (Stage 2), 2008-2010 (Stage 3). Participants were selected and allocated to one of three groups, those with no shoulder pain in Stage 2 and 3 of the NWAHS (no pain), those with pain in Stage 2 but not Stage 3 (resolved pain) and those with pain in Stage 2 and Stage 3 (persistent pain).

Shoulder range of movement was examined and the Shoulder Pain and Disability Index (SPADI) undertaken. A shoulder X-ray and MRI of the shoulder with previous or current shoulder pain was undertaken or matched side (in those with no current or previous pain). The X-rays and MRI were read independently by two consultant radiologists, blinded to the participant group and each other. A standardised report was then developed.

Ethics approval for the study was granted by the Human Research Ethics Committee of the Queen Elizabeth Hospital, Adelaide, SA.

Results

Overall, 12 males and 18 females participated (mean age 64.8 years). The no and previous pain groups did not report pain when asked to complete the SPADI, however the mean percentage score for the pain group was 41.80 (SD 20.10, range 18-74). There was some minor functional limitations among the previous pain group (mean percent function score 1.2, SD 2.70, range 0-7.5) and the mean score for the current pain group was 31.88 (SD 20.41, range 8.75-60). In the current pain group, 50% reported that shoulder pain stopped them going to sleep at night, 70% reported that their shoulder pain woke them up at night, and 50% reported that it was difficult to go back to sleep. When rating, on a scale of 0 (no pain) to 10 (the worst pain imaginable) how painful their shoulder was at night, the mean score was 3.90 (SD 2.89, range 0-8).

On X-ray, no bone lesions or injury were evident. There were some variations between the groups in terms of the subacromial space and GHJ arthritis, however generally there were few differences between each group. A summary of key MRI results is presented in Table 1 and example MRIs are in Figure 1 and 2.

Table 1: Summary of key MRI results (n=10 in each group)

		No pain	Resolved pain	Persistent pain
A/C joint degeneration	Mild	2	4	3
	Moderate/severe	6	5	7
Rotator cuff : supraspinatus, infraspinatus, subscapularis, teres minor	Tendonosis	6	12	4
	Partial	8	6	12
	Full	2	2	2
Bone oedema		6	5	7
Capsulitis		0	0	1
Bursitis		9	9	10
GHJ degeneration		8	7	6
Labral tear		2	2	1

Figure 1: Full thickness tear of supraspinatus
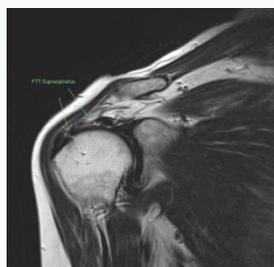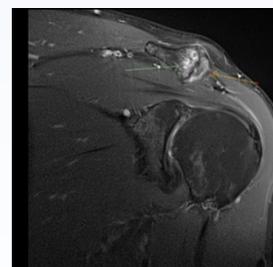

Figure 2: Severe AC joint arthrosis

Conclusion

Shoulder pathology occurs in those with and without pain however MRI is a costly method of detecting pathology. If surgery is not a consideration, MRI may not be an appropriate method of investigating shoulder pain.

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North West Adelaide Health Study