



How do Australian GPs manage shoulder dysfunction?



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Shoulder pain is the third most common musculoskeletal presentation in general practice, following back and neck pain.^{1,2} Although 50–60% of acute shoulder pain resolves in 8–10 weeks, many patients anticipate imaging. Pain persisting beyond 3 months is strongly related to personality traits, coping style and occupational factors.^{3,4} There has been an increase in the use of shoulder diagnostic imaging by Australian general practitioners.⁵ However, current practice in imaging and management of shoulder pain is not supported by the evidence.⁶

In response to this, we undertook a retrospective medical record audit of shoulder pain presentations in general practice to study diagnostic and treatment management.

Method

Ethics approval was obtained from the University of Adelaide Human Research Ethics Committee. We audited computerised case notes from Medic-GP® – a general practice medical record system used by 15 GPs from nine South Australian practices for 8 years. We searched the records using the key word 'shoulder'; the text of the medical records to identify patients from 1 July 2000 to 30 November 2002.

Further searches of these records identified patients undergoing imaging. Shoulder trauma, patients under 18 years of age and pregnant women were excluded. Trained

data entry staff coded relevant details for each episode of care using a controlled vocabulary list.

We used descriptive statistics to describe patients investigated with and without imaging, univariate analyses to test the association between investigation, and a variety of factors and logistic regression to estimate odds ratios.

Results

During the audit period, the database had 17 233 patients, of whom 1867 presented with a shoulder problem either primarily or combined with another problem; a total prevalence of 10.8%. Imaging was ordered for 324 patients and not for 1543. This is a similar proportion to that found in the BEACH study;⁷ a ratio of 1:4.8.

We used a random number generator to obtain a sample of 183 patients, 84 with imaging and 99 without. These patients were treated by 15 GPs; 457 visits for the imaged group (5.4 visits per episode of care) and 167 for the nonimaged group (1.7 visits per episode of care). An 'episode of care' was defined as all care related to shoulder pain.⁸

Univariate logistic regression of the sociodemographic factors (*Table 1*) identified three significant predictors for imaging ($p < 0.02$): age over 45 years, pain with activity, and duration of pain lasting more than 5 weeks.

A physical examination of shoulder movement in two or more planes was recorded at the first visit for 138 (75%) patients, equally divided between the groups. There was no record of what restricted range of movement precipitated imaging. Twenty-nine (16%) patients had no record of a physical examination. Nor did the 10 out of 84 patients (12%) who were referred to a specialist.

Imaging was recorded at the first visit for 58 (69%) patients. This was most commonly ultrasound alone (57/95, 60%), with an additional 30 (32%) ultrasounds conducted in conjunction with a plain film (occasionally at a second visit). Normal results were reported in 25% of cases, a similar result when compared with the BEACH study.⁷

There were differences in GP management for patients with and without imaging. Total GP visits were higher in the former (5.4 compared with 1.7), as was the use of NSAIDs (55% vs. 30%) and specialist referrals (45% vs. 6%); ($p < 0.001$). Use of analgesics (29% vs. 23%) and physiotherapy (32% vs. 23%) were not significantly different.

Where a diagnosis was recorded, eight out of 25 (32%) were in agreement with the imaging report. Nonspecific diagnosis prevailed (70%), eg. 'shoulder syndrome', 'strain' or 'pain'. No imaging reports mentioned imaging the contralateral side, or whether pain was reproduced during imaging.

Discussion

Our results parallel those of BEACH data,⁷ a report from the National Musculoskeletal Medicine Initiative (NMMI),⁹ and other results.¹⁰

This retrospective audit can only speculate that there are deficiencies in management of nontraumatic shoulder pain because we could not discover the clinical reasons for ordering imaging, duration of shoulder pain episodes, or the effects imaging had on management of shoulder pain (and our GPs may not have been representative).

We found the imaging rate for shoulder dysfunction lower than the GPs in the NMMI study, but higher than for evidence based clinics (6%).⁹ However, the high percentage of image ordering at the first visit is of concern. If this practice is widespread, then few GPs are following guidelines suggested by The Royal Australian and New Zealand College of Radiologists which recommend all shoulder ultrasounds be preceded by plain film.¹¹ On the other hand, this may be better care as a recent study showed that plain film is usually uninformative in this situation.¹²

The association of imaging with increased number of visits, use of NSAIDs, referral to specialists (and according to the BEACH study, longer consultations) may simply be from confounding evidence. If not, there is potential for cost savings and better care. Since 2002, the Medical Benefits Schedule considers ultrasound scanning of the shoulders to be standard, and requires a diagnosis before a rebate is paid.

Implications of this study for general practice

- Most patients presenting with nontraumatic shoulder pain over the age of 50 years had degenerative changes.
- The reason for their pain may not be identified.

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Table 1. Sociodemographic profile of patients with shoulder pain

Factor	Imaged		Not imaged	
	n	(%)	n	(%)
Total number	84	100	99	100
Gender				
Male	38	(45)	42	(42)
Female	46	(55)	57	(58)
Age group				
<45	17	(20)	41	(41)
45>	67	(80)	58	(59)
Occupation				
Not recorded	54	(64)	45	(45)
Manual work	14	(17)	16	(16)
Nonmanual work	4	(5)	8	(8)
Other	12	(14)	30	(30)
When pain first noticed				
Not recorded	36	(43)	42	(42)
<=1 week	13	(15)	35	(35)
2-4 weeks	11	(13)	11	(11)
5-13 weeks	12	(14)	4	(4)
14-25 weeks	7	(8)	3	(3)
>=26 weeks	5	(6)	4	(4)
Total number of GP visits for shoulder management				
1	6	(7)	58	(59)
2	22	(26)	25	(25)
3-5	35	(42)	14	(14)
>=6	21	(25)	2	(2)
Number of GP visits before imaging order				
1	58	(69)	58	(59)
>1	26	(31)	41	(41)
Earliest visit documenting a physical examination				
Never	10	(12)	19	(19)
First	65	(77)	73	(74)
Second-fourth	8	(10)	7	(7)
Fifth	1	(1)	0	(0)
Pain with activity documented at first visit				
Yes	37	(44)	21	(21)
No	47	(56)	78	(79)
History of shoulder pain				
Yes	35	(42)	30	(30)
No	49	(58)	69	(70)
Patient perspective of cause				
Trauma related	21	(25)	29	(29)
Other	22	(26)	25	(25)
Not stated	41	(49)	45	(45)
Any comorbidity				
Yes	58	(69)	60	(61)
No	26	(31)	39	(39)
Pathology from imaging				
Subacromial space*	46	(70)		
Acromioclavicular joint problem	5	(8)		
Tendonitis	5	(8)		
Other	5	(8)		
Nonrecorded	4	(6)		
Capsulitis	1	(2)		

* Within the subacromial space there were eight tears (17%) with only one reported as full thickness

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Conflict of interest: none declared.

References

1. Cailliet R. *Shoulder pain*. 2nd edn. Philadelphia: FA Davis, 1981.
2. Van der Heijden GJ, van der Windt DA, Kleijnen J, Koes BW, Bouter LM. Steroid injections for shoulder disorders: a systematic review of randomised controlled trials. *Br J Gen Pract* 1996;46:309-316.
3. Van der Windt DA, Koes BW, Boeke AJ, Deville W, DeJong BA, Bouter LM. Shoulder disorders in general practice: prognostic indicators of outcome. *Br J Gen Pract* 1996;46:519-523.
4. Van der Heijden GJ. Shoulder disorders: a state of the art review. *Baillieres Clin Rheumatology* 1999;13:287-309.
5. Broadhurst NA, McLaren SJ. Shoulder pain: what ultrasound imaging reveals. *Aust Mus Med* 2003;8:29-31.
6. Australian Acute Musculoskeletal Pain Guidelines Group. Ch 7. Acute shoulder pain. In: *Evidence based management of acute musculoskeletal pain*. Brisbane: Australian Academic Press, 2003;119-154. Available at: <http://www.nhmrc.gov.au/publications/pdf/cp94.pdf>
7. Britt H, Miller GC, Knox S. Shoulder syndrome. In: *Imaging orders by general practitioners in Australia 1999-2000*. AIHW Cat. No. GEP 7. General Practice Series No. 7. Canberra: Australian Institute of Health and Welfare 2001;101-104.
8. Lamberts H, Hofmans-Okkes I. Episode of care: a core concept in family practice. *J Fam Pract* 1996;42:161-167.
9. Australasian Faculty of Musculoskeletal Medicine. *Report on the National Musculoskeletal Medicine Initiative*. Section III E. Newcastle: August, 2001.
10. Green S, Buchbinder R, Hetrick S. Physiotherapy interventions for shoulder pain (Cochrane Review). In: *The Cochrane Library*, Issue 1. Chichester, UK: John Wiley & Sons Ltd, 2004.
11. Lau L. *Imaging Guidelines*. 4th edn. Melbourne: The Royal Australian and New Zealand College of Radiologists 2001;191-193.
12. Fraenkel L, Shearer P, Mitchell P, La Valley M, Feldman J, Felson DT. Improving the selective use of plain radiographs in the initial evaluation of shoulder pain. *J Rheum* 2000;27:200-204.

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