

The long-term course of shoulder complaints: a prospective study in general practice

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Abstract

Objective. Assessment of the long-term course of shoulder complaints in patients in general practice with special focus on changes in diagnostic category and fluctuations in the severity of the complaints.

Design. Prospective descriptive study.

Setting. Four general practices in The Netherlands.

Method. All patients (101) with shoulder complaints seen in a 5 month period were included. Assessment took place 26 weeks and 12–18 months after inclusion in the study with a pain questionnaire and a physical examination.

Results. A total of 51% of the patients experienced (mostly recurrent) complaints after 26 weeks and 41% after 12–18 months. Diagnostic changes were found over the course of time, mostly from synovial disorders towards functional disorders of the structures of the shoulder girdle, but also the other way round. Although 52 of the 101 patients experienced complaints in week 26, 62% of those patients considered themselves 'cured'. After 12–18 months, 51% of the 39 patients experiencing complaints felt 'cured'.

Conclusion. Many patients seen with shoulder complaints in general practice have recurrent complaints. The nature of these complaints varies considerably over the course of time, leading to changes in diagnostic category. Because of the fluctuating severity of the complaints over time, feeling 'cured' or not 'cured' is also subject to change over time.

KEY WORDS: Shoulder complaints, Long-term course, Diagnosis.

Two recent studies have been published describing the long-term course of shoulder complaints in general practice [1, 2]. In both studies, it appeared that 50–60% of the patients still experienced complaints after 12–18 months. In these studies, the long-term evaluation was carried out with questionnaires on shoulder and neck complaints as well as disability. No physical examination was performed after inclusion in the study. This raises questions about the consistency of the initial diagnostic categories over time.

A follow-up study of patients in general practice, in which patients were examined at regular intervals, revealed that the character of the symptoms changed considerably in the first few weeks [3]. Furthermore, in a follow-up study of a comprehensive shoulder pain score, it became evident that the patients did not have to be completely free of pain to consider themselves 'cured', i.e. some patients with (minor) complaints feel that they do not require medical care anymore [4].

Because of this apparent lack of consistency in the findings at subsequent physical examination, and the ambiguity attached to feeling 'cured', we have doubts about the consistency of diagnoses over the course of time. We therefore carried out a long-term follow-up study of patients with shoulder complaints in general practice that focused on changes in diagnostic category and on the concept of feeling 'cured'.

Patients and methods

Patients

All patients with shoulder complaints seeking consultation in four general practices in Groningen, The Netherlands, between 1 January and 1 June 1993 were included in the study unless one of the exclusion criteria applied. These exclusion criteria were: (1) treatment for shoulder complaints in the 6 months prior to consultation; (2) bilateral shoulder complaints; (3) the presence of specific rheumatic disorders (polymyalgia rheumatica, rheumatoid arthritis, systemic lupus erythematosus, fibromyalgia); (4) shoulder complaints due to acute severe trauma (e.g. fracture, dislocation, cuff rupture)—

Submitted 26 March 1998; revised version accepted 14 October 1998.

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patients with a history of minor trauma were not excluded; (5) presence of cervical disc herniation; (6) presence of dementia or other psychiatric disorder.

Shoulder complaints

Shoulder complaints were defined as pain localized in the region of the deltoid muscle, the acromioclavicular joint, the superior part of the trapezius muscle, and the scapula. The pain could be present with or without radiation into the arm. Also, limitation of motion of the upper arm and/or the shoulder girdle could be present.

The severity of shoulder complaints was assessed with the use of the Shoulder Pain Score. This is a six-item questionnaire together with a 101-point numerical pain scale. The six questions, viz. pain at rest, pain during motion, pain during the night, sleeping problems due to pain, inability to lie on the affected side, and presence of radiating pain, were scored on a four-point scale of severity. The score on the 101-point numerical pain scale was also converted to a four-point scale in order to calculate the sum score of the Shoulder Pain Score [between 7 points (no pain) and 28 points (severe pain)]. The Shoulder Pain Score was validated in an earlier study and proved to be a useful instrument for following the course of the disorder over time [4].

One of the questions on the Shoulder Pain Score form was whether the patient felt 'cured'. Feeling 'cured' was defined as the disappearance of shoulder complaints or a decrease of shoulder complaints to such an extent that the complaints were no longer inconvenient, did not require therapy, or no longer interfered with normal work duties.

Follow-up examination

Follow-up examination by means of the Shoulder Pain Score and a physical examination took place 26 weeks after inclusion in the study (T1). Twelve to 18 months after inclusion in the study (T2), a questionnaire enquiring about past and present complaints, together with the Shoulder Pain Score, was sent to all patients. Those patients who indicated 'not cured' were called in for a repeat physical examination.

Physical examination

The physical examination consisted of inspection, and examination of active and passive range of motion in the glenohumeral joint, cervical spine and upper thoracic spine. Resisted movement testing, and palpation of the muscle tendons on the head of the humerus, the acromioclavicular joint and the upper ribs were also undertaken. The physical examinations were performed by the four participating general practitioners. In order to limit inter-doctor variation, the general practitioners had previously had several practice sessions on physical examination techniques.

Diagnosis

After physical examination, the patients were classified into one of three diagnostic groups: (1) synovial

disorders; (2) functional disorders of the shoulder girdle; (3) combinations of synovial and shoulder girdle disorders. This diagnostic classification was chosen because >50% of the patients did not meet the criteria for the syndrome classification of the National Guidelines for Shoulder Complaints of the Dutch College of General Practitioners, which is based on the Cyriax classification [5-7].

Synovial disorder. Pain and/or limitation of motion in one or several directions of the range of motion of the scapulohumeral joint. These complaints originate from disorders of the subacromial structures, the acromioclavicular joint, the glenohumeral joint or combinations thereof.

Shoulder girdle disorder. The pain and/or the sometimes present (slight) limitations of active motion of the scapulohumeral joint are not related to the synovial structures. Instead, pain or limitation in one or several directions of the range of motion of the cervical spine and/or the upper thoracic spine and/or the upper ribs is found (the shoulder girdle). The complaints originate from functional disorders of these structures.

Combination group. Pain and sometimes slight limitation in the range of motion at the scapulohumeral joint, together with pain or limitation of the range of motion of the cervical spine and/or the upper thoracic spine and/or the upper ribs. Both the synovial structures and the structures of the cervical spine, the upper thoracic spine or the upper ribs may cause the complaints.

Treatment

During the first 2 weeks after inclusion, all patients were given the same treatment, i.e. a non-steroidal anti-inflammatory drug (NSAID; diclofenac sodium 3 × 50 mg), after which the general practitioners involved were allowed to prescribe therapies tailored to the complaints of the patient, i.e. physiotherapy, injection therapy, manipulative therapy, or monitoring the course of the complaints so that NSAID or paracetamol could be administered if needed.

Results

A total of 101 patients were included in the study. The patients' characteristics are summarized in Table 1.

TABLE 1. Characteristics of the survey population ($n = 101$)

Age (yr)	47.3 (s.d. = 15.4)
Women/men	59/42
Right-handed	91
Previous complaints	41
History of minor trauma	18
Working situation	
Full time	24
Part time	30
No paid employment	47
Period of complaints before first consultation	
≤ 1 week	26
2-4 weeks	25
5-25 weeks	25
≥ 26 weeks	25

Upon re-examination of the 101 patients at week 26 (T1), 49 patients felt 'cured' and no longer had complaints; 32 patients reported that they had minor complaints, but felt 'cured'. The remaining 20 patients did not feel 'cured'; of these, only three were not able to work because of the complaints. The Shoulder Pain Score in week 26 was 7 in the 'cured' group, 10 (s.d. = 1.5) in the group 'cured with complaints' and 13.7 (s.d. = 3.2) in the 'not cured' group. The differences were significant for all three groups ($P < 0.05$).

Table 2 shows the diagnoses at week 26 (T1) of the patients of each diagnostic category at inclusion. Forty per cent of the patients with complaints at T1, and upon inclusion diagnosed as synovial disorder, were diagnosed as functional disorder of the shoulder girdle at T1. Of the patients diagnosed upon inclusion as combination diagnosis, 66% showed this shift toward the shoulder girdle group at T1. Five patients showed no disorders in function at all. Two of the six patients 'not cured' with a synovial disorder were found to have developed a frozen shoulder.

Ninety-four patients returned their final assessment questionnaires at 12–18 months after inclusion in the study (T2). Fifty-five patients reported no complaints. Of this group, 14 reported having had complaints after week 26, but were without complaints at present. Twenty patients still had complaints, but considered themselves 'cured'. Nineteen patients felt 'not cured'. The Shoulder Pain Score was 8.2 (s.d. = 2.9) for the group 'cured', 11.6 (s.d. = 3.0) for the group 'cured with complaints' and 15.9 (s.d. = 3.9) for the group 'not cured'. The differences were significant for all three groups ($P < 0.05$).

Five patients were referred to a specialist. One patient had surgical subacromial decompression.

The 19 patients of the 'not cured' group were called in for a physical examination, and 18 were examined. All patients in this last group were able to work.

Table 3 shows, for each diagnostic category at T1, the diagnosis at T2. There are minor changes in diagnostic category. Thirteen patients had a recurrence of complaints at T2, of whom seven did not feel 'cured'. At T2, most patients suffered from functional disorders of the shoulder girdle.

Discussion

The results of this study show that 51% of the patients with shoulder complaints in general practice have (recurrent) complaints after 26 weeks and 41% of the patients after 12–18 months. These results are in agreement with the findings of Croft *et al.* [1] and Van der Windt *et al.* [2]. However, our results indicate two findings that are of importance in the long-term follow-up of patients with shoulder complaints.

First, it appeared that the diagnostic category is subject to change over the course of time. Most changes were seen at the examination at T1 as a shift towards the group with a shoulder girdle disorder. At the examination at T2, most patients 'not cured' were diagnosed as having functional disorders of the shoulder girdle. This change in diagnostic category over the course of time has to be considered in follow-up studies on shoulder complaints. Only with a physical examination can this be properly described. The changes in diagnostic category also influence the therapeutic approach. In a

TABLE 2. Distribution of the diagnoses at T1 (26 weeks after inclusion in the study) of the patients in the three diagnostic categories at inclusion

	Shoulder girdle	Synovial	Combination
Inclusion	22	58	21
T1 cured	12	28	9
T1 cured with complaints	6	16	10
Diagnosis			
Shoulder girdle	3	8	7
Synovial	0	2	1
Combination	1	4	1
No disorders	2	2	1
T1 not cured	4	14	2
Diagnosis			
Shoulder girdle	3	4	1
Synovial	1	5	0
Combination	0	5	1

TABLE 3. Distribution of the diagnoses at T2 (12–18 months after inclusion in the study) of the patients in the four diagnostic categories of T1 (26 weeks after inclusion)

	T1	T2 cured	T2 cured with complaints	T2 not cured	Diagnosis		
					Girdle	Synovial	Combination
Shoulder girdle	25	7	11	7	7	0	0
Synovial	9	6	0	3	1	0	2
Combination	10	5	3	2	1	0	1
Cured	50	37	6	6	3	3	0

recent study, it appeared that synovial disorders are best treated with a steroid injection and shoulder girdle disorders with manipulative therapy [8]. Thus, the therapy has to be adapted if the diagnostic category changes.

Secondly, more than half of the patients with complaints felt 'cured'. This is consistent with Van de Lisdonk's [9] finding in an open population study. Many patients have minor complaints for which they do not consult their general practitioner. Despite their complaints, they feel 'cured'. The Shoulder Pain Score proved to be indicative of whether a patient felt 'cured' or not. With a pain score of about 10 or 11, patients felt 'cured' and did not seek medical help; with a pain score of 13 or more, patients did not feel 'cured' and might seek medical help. This is in accordance with an earlier study on the Shoulder Pain Score which showed that the margin between having complaints and feeling 'cured' is a very narrow one [4].

The difficulty we encountered in this study was that 50% of the patients did not meet the criteria for the syndrome classification of the National Guidelines for Shoulder Complaints. We therefore used another diagnostic classification. Interestingly, arguments against too detailed a diagnostic classification have recently been published. In a cluster analysis of variables of the medical history and the physical examination of patients with shoulder complaints, only three groups of patients could be distinguished [10]. No specific patterns in the limitation of mobility were found. Moreover, Bamji *et al.* [11] and Liesdek *et al.* [12] describe only a moderate rate of correspondence in the diagnosis of shoulder complaints. Our diagnostic classification may seem superficial, but it is a practical one. Even with this superficial classification, changes in diagnostic category were found.

As to the objective of this study, it may be concluded that many patients seen with shoulder complaints in general practice experience recurrence. However, the nature of their complaints may change considerably over the course of time. As a result, changes in diagnostic category and changes in the patients feeling 'cured' or not 'cured' take place.

Acknowledgements

We thank our colleague general practitioners, Henk Spelde and Jan Woudhuizen, for their enthusiastic

participation in this study, and Michel Dings for his assistance in collecting the data. This study was conducted with a grant from the Ministry of Welfare, Health and Culture.

References

1. Croft P, Pope D, Silman A. The clinical course of shoulder pain: prospective cohort study in primary care. *Br Med J* 1996;313:601-2.
2. van der Windt DAWM, Koes B, Boeke AP, Devillé W, de Jong BA, Bouter LM. Shoulder disorders in general practice: prognostic indicators of outcome. *Br J Gen Pract* 1996;46:519-23.
3. Winters JC, Sobel JS, Groenier KH, Arendzen JH, Meyboom-de Jong B. The course of pain and the restriction of mobility in patients with shoulder complaints in general practice. *Rheumatol Int* 1997;16:219-25.
4. Winters JC, Sobel JS, Groenier KH, Arendzen JH, Meyboom-de Jong B. A shoulder pain score: A comprehensive questionnaire for assessing pain in patients with shoulder complaints. *Scand J Rehabil Med* 1996;28:163-7.
5. Sobel JS, Winters JC, Arendzen JH, Groenier KH, Meyboom-de Jong B. Schouderklachten in de huisartspraktijk. (Shoulder complaints in general practice.) *Huisarts Wetenschap* 1995;33:342-7.
6. Bakker JF, de Jongh AC, Jonquière M, Mens J, Oosterhuis WW, Poppelaars A *et al.* NHG Standaard Schouderklachten (National Guidelines for Shoulder Complaints of the Dutch College of General Practitioners). *Huisarts Wetenschap* 1990;33:196-202.
7. Cyriax J. Textbook of orthopaedic medicine, 11th edn, Vol. 1. Diagnosis of soft tissue lesions. London: Baillière Tindall, 1984:127-42, 143-58.
8. Winters JC, Sobel JS, Groenier KH, Arendzen JH, Meyboom-de Jong B. Comparison of physiotherapy, manipulation, and corticosteroid injection for treating shoulder complaints in general practice: randomised, single blind study. *Br Med J* 1997;314:1320-5.
9. Van de Lisdonk EH. Ziekten in de huisartspraktijk. (Diseases in general practice) Utrecht: Bunge, 1990.
10. Winters JC, Groenier KH, Sobel JS, Arendzen JH, Meyboom-de Jong B. Classification of shoulder complaints in general practice by means of cluster analysis. *Arch Phys Med Rehabil* 1997;78:1369-74.
11. Bamji AN, Erhardt CC, Price TR, Williams PL. The painful shoulder: can consultants agree? *Br J Rheumatol* 1996;35:1172-4.
12. Liesdek C, van der Windt DAWM, Koes BW, Bouter LM. Soft-tissue disorders of the shoulder. A study of inter-observer agreement between general practitioners and physiotherapists and an overview of physiotherapeutic treatment. *Physiotherapy* 1997;83:12-7.



BRHEUM – MSS No. 8A/0130d

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