PAIN SEVERITY IN PATIENTS WITH PAINFUL SHOULDER SYNDROME

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SUMMARY

The aim of this study was to assess the severity of pain and its correlations to clinical characteristics in Painful Shoulder Syndrome (PSS) patients. A descriptive study was conducted using retrospective data from 77 medical record files. The Visual Numerical Scale (VNS) was used as an assessment instrument. The following variables of interest were considered: VNS (77), diagnosis (57), affected shoulder (77), sex (77), age (76), pain site (77), use of medications (59) and associated cervical pain (77). 53.2% of the patients were females and the mean age was 50.4±15.7 years. The right shoulder was the most affected side (57.1%). Severe pain was reported by 41.6% of patients, more frequently in women (56.1% vs 25.0%; p=0.006), and on left shoulder (57.7% vs 31.8%, p=0.034). Of the studied patients, 59 (81.3%) used medications, most frequently anti-inflammatory drugs. The rotator cuff syndrome was present in 80.7% (57) and associated cervical pain in 15.6% (77). Pain exclusively on the shoulder accounted for 76.5%. The rotator cuff syndrome was shown to be the most frequent cause of PSS, more commonly and severely affecting women close to 51 years old. EVN was shown to be a relevant instrument for measuring pain in PSS.

Keywords: *Shoulder pain; Tendonopathy; Rotator cuff.*

Citation: *Garzedin DDS, Matos MAA, Hiláriodaltro C, Barros RM, Guimarães A. Pain severity in patients with painful shoulder syndrome. Acta Ortop Bras. [serial on the Internet]. 2008; 16(3):165-167. Available from URL: http://www.scielo.br/aob.*

INTRODUCTION

Pain is an unpleasant sensorial and emotional experience, associated to actual or potential tissue injuries, or described as if an injury existed[1]. The Painful Shoulder Syndrome (PSS) is characterized by pain and functional restraint resulting from the involvement of static and dynamic structures of the shoulder, such as ligaments, capsule and muscles[2].

Shoulder pain is one of the most common and disabling complaints of the musculoskeletal system of the overall population[3]. Its prevalence is estimated to be between 15%-25% on patients visiting orthopaedic and physical therapy clinics[4-7]. The most frequent cause for shoulder pain is the rotator cuff injury, which may affect individuals of any age group, being enhanced with aging and professional occupation or recreation[8,9].

Often, PSS is treated conservatively with drugs and physical therapy, and, when left untreated, it leads to long periods of pain and functional restraints. The conservative treatment usually has its results assessed based on function and severity of pain reported by patients.

It is important to characterize and quantify shoulder pain aiming to guide patients concerning the right positions of the UULL during professional and daily activities. Approaches based on pain severity could prevent PSS from evolving to a chronic condition[10,11]. However, publications in literature investigating clinical and demographic characteristics, as well as pain severity in patients with PSS, are quite scarce.

The objective of this study was to assess pain severity and its correlation with clinical characteristics of a group of patients with PSS.

MATERIALS AND METHODS

This was a descriptive study that used retrospective data about pain severity on 77 patients of a physical therapy clinic in Salvador, Bahia. The study was approved by the Committee of Ethics in Research of the Foundation for Sciences Development.

Any patient with shoulder pain secondary to surgery, fracture, IAM, post-AVE or bone tumor were excluded from the study. As assessment tool, the Numeric Visual Scale (NVS) internationally validated was employed. This scale ranges from zero (no pain) to 10 (worst pain ever experienced), which has been routinely used in this service[12]. NVS was divided into mild pain (0 ⊢ 3), moderate pain (3 ⊢ 7) and severe pain (7 ⊢ 10).

The following variables of interest were taken into account, the corresponding n of which are consistent with the information provided by medical files, namely: NVS (77), affected shoulder (77), gender (77), age (76), diagnosis (57), pain site (77), medication use (59) and associated cervical condition (77).

For the statistic analysis, the SPSS for Windows® (release 9.0) was employed for data mapping and analysis. The results of

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Received in: 04/23/07; approved in: 08/31/07

the continuous variables were presented as average ± standard deviation. Categorical variables were presented as percent values. For comparing two averages, the Student t-test was employed for independent samples and, for comparing proportions, the Chi-squared test was applied. P values ≤ 0.05 were regarded as statistically significant.

RESULTS

The clinical-demographic variables were globally analyzed for patients with PSS (Table 1), and these variables were correlated with pain severity (Table 2). Keeping in mind that the most frequent diagnosis was the rotator cuff syndrome (RCS), we also compared patients with and without this diagnosis (Table 3). Distributions for frequency, as well as the results of the statistical analysis, are described on their corresponding tables.

DISCUSSION

Shoulder pain is one of the most frequent complaints in services treating musculoskeletal diseases. Despite this, much should be studied about this condition. There are several reports on selected populations, such as on clinical, aged, surgical patients, as well as on cadavers; however, descriptive studies about samples withdrawn from the overall population are uncommon[13]. Population investigations are more effective and provide reliable data, allowing for a better understanding and adequacy of the treatment protocols.

Characteristics (n accounted)	n (%)	p
Gender (77)		0.669
Male	36 (46.8)	
Female	41 (53.2)	
Age (75)		
< 40	18 (24)	
40 – 64.9	43 (57.3)	
> 64.9	14 (18.7)	
Diagnosis (57)		0.001*
RCS	46 (80.7)	
ACS	2 (3.5)	
Cervicalgia	3 (5.3)	
Non-specified injury	2 (3.5)	
Normal	4 (7)	
Affected shoulder (77)		0.112
Right	44 (57.1)	
Left	26 (33.8)	
Bilateral	7 (9.1)	
Associated cervical pain (77)		0.001*
Yes	12 (15.6)	
No	65 (84.4)	
NVS (77)		0.265
Mild	4 (5.2)	
Moderate	41 (53.2)	
Severe	32 (41.6)	
Pain site (77)		0.000*
Exclusively on the shoulder	59 (76.6)	
Other sites	18 (23.4)	
Medication use (59)		0.000*
Yes	49 (83.1)	
No	10 (16.6)	

* statistically significant

Table 1 – *Clinical-demographic characteristics of patients with painful shoulder syndrome (PSS).*

Characteristics (n = 77)	Mild to Moderate pain (%)	Severe Pain (%)	p
Gender			0.006*
Male (36)	27 (75)	9 (25)	
Female (41)	18 (43.9)	23 (56.1)	
Affected shoulder			0.105
Right (44)	30 (68.2)	14 (31.8)	
Left (26)	11 (42.3)	15 (57.7)	
Bilateral (7)	4 (57.1)	3 (42.9)	
Age			0.168
< 40 (18)	7 (38.9)	11 (61.1)	
40 – 64.9 (43)	28 (65.1)	15 (34.9)	
> 64.9 (14)	8 (57.1)	6 (42.9)	
Medication use			0.872
Yes (49)	25 (51)	24 (49)	
No (10)	5 (50)	5 (50)	

* statistically significant (p= mild to moderate pain vs. severe pain)

Table 2 – *Clinical characteristics of patients with painful shoulder syndrome, according to pain severity.*

Characteristics (n = 57)	With RCS (%)	Without RCS (%)	p
Gender			0.497
Male (31)	24 (77.4)	7 (22.6)	
Female (26)	22 (84.6)	4 (15.4)	
Affected shoulder (56)**			0.464
Right (38)	29 (76.3)	9 (23.7)	
Left (25)	21 (84)	4 (16)	
NVS			0.356
Mild to Moderate (33)	28 (84.8)	5 (15.2)	
Severe (24)	18 (75)	6 (25)	
Age	51.16 (±14.43)	40.09 (± 14,05)	0.027*
Medication use			0.833
Yes (37)	31 (83.8)	6 (16.2)	
No (5)	4 (80)	1 (20)	

* significant (p= RCS present vs. RCS absent) - ** some patients were bilaterally affected

Table 3 - *Clinical characteristics of patients with painful shoulder syndrome, with and without rotator cuff syndrome (RCS).*

Our study represents a sample of the overall population complaining of shoulder pain (PSS), without any other selection bias in addition to the fact of having sought medical care. Our case series is also large enough to represent the population with shoulder pain, based on an alpha error of 0.05 and average difference of 0.1. Some aspects, however, must be taken into account. Like any other retrospective clinical study, it presents some external validation limitations, but it also presents a high internal validation power.

We didn´t find in literature similar publications that also took the investigation of shoulder pain characteristics as well as its measurement into account. The instruments employed for measuring pain can have single or multiple dimensions. Our study used the Numeric Visual Scale (NVS), which is a simple, sensitive and reproducible single-dimension scale, enabling us to continuously assess pain[12].

Our results evidenced that PSS is more frequent (53.2%) and severe (23%) among women, being more common in mid-aged individuals (50.4 ± 15.7 years); these data are consistent to the study by Facci[14], which retrospectively assessed painful shoulders from

medical files, finding a prevalence of females in 66.21% of the 74 patients assessed[14]. Perhaps this is due to the fact that women frequently perform repeated efforts by lifting the upper limbs, thus causing a biomechanical stress on the shoulder predisposing them to injuries[4,15]. Aasa et al.[16] found in their study that physical and psychic requirements in women working as ambulance personnel act as risk factors for shoulder and neck pain[16].

The mean age of 50.4 years in our study corroborates the findings by White and Facci, which correlate shoulder injuries to half-aged individuals. Facci found a mean age of 50.23 years, and justifies this finding as being correlated to the fact that rotator cuff injuries usually occur around the age of 50, being unusual in young individuals[9,14].

Pain was more severe exactly at the shoulder (76.6%), with the right limb being most frequently affected. Pain severity was mild to moderate in most of the cases, being more severe in women and on left shoulders; however, this pain assessment may have been underestimated, since 83.1% of 59 patients studied were using some kind of medication for pain relief, especially non-steroidal anti-inflammatory drugs.

Rotator cuff conditions were present in 80.7% of 59 cases with diagnostic records, followed by adhesive capsulitis of the shoulder (ACS), in 3.5%. Cadaver studies in which the correlation with symptoms or demographic factors cannot be considered, show 20%-51% of rotator cuff injuries[13]. The RCS was the most frequent diagnosis among our PSS patients. These data are similar to those presented by other authors (Nove-Josserand et al.[8], Milgrom et al.[17], Andrade et al.[13]) which also confirmed that rotator cuff conditions are the injuries most frequently seen in symptomatic or asymptomatic shoulders.

Nove-Josserand et al.[8] studied, both clinically and by X-ray images, the natural history of shoulder joints of 200 patients aged 70-101 years and found an increased incidence of rotator cuff injuries with aging[8]. Milgrom et al.[17] studied the integrity of 90 asymptomatic rotator cuffs by ultrasound; ages ranged from 30 to 99 years, and rotator cuff injuries were shown to present a correlation with aging regardless of the presence of clinical symptoms[17]. Andrade et al.[13] attributed the physiopathology of rotator cuff injuries to primary and secondary causes, following the example of the degenerative process associated to the natural aging of tendons[13].

Sher et al.[18] using magnetic resonance imaging on 96 asymptomatic individuals, found injuries in 34%, but among those above the age of 60, this number climbed to 54%. Our study also confirms the reports of many of the authors mentioned here. Our case series show a prevalence of individuals between 40 and 64.9 years; however, rotator cuff injuries were shown to be more common among older patients when compared to the group not presenting RCS (51.14 *vs* 40.09 years)[18].

Pain evaluation in our case series evidenced that younger patients and women presented with more severe pain. The left side was shown to be more severely painful, particularly in those patients complaining exclusively of shoulder pain (76.6%), which corroborates the etiology of the disease on the shoulder complex and not in other regions[13]. There are reports clearly correlating clinical symptoms of the shoulder with the biomechanical integrity of this joint[19]. We believe that he left shoulder was more symptomatic because this is usually the non-dominant side, thus less biomechanically able to meet physical, occupational or recreational requirements.

The adhesive capsulitis of the shoulder was the second most frequent diagnosis in our study, with 3.5% of 57 patients. This disorder usually affects women between 40 and 60 years[20]. Although adhesive capsulitis cases are not so frequent, they are shown to be much more prevalent in specialized clinics. Neer et al.[21] found 14% of adhesive capsulitis in patients with rotator cuff injuries. In our study, however, we found no overlap of these conditions[21].

Associated cervical spine complaints were present in 15.6%, with 41.6% of these patients complained about severe pain on the shoulder. This association can have a correlation with neuropathies or syndromes involving the cervical-brachial plexus.

Our study substantially contributes to the knowledge of the key variables associated to the rotator cuff syndrome, and these data are essentially important for modifying or guiding conservative treatment protocols based on PSS patients´ characteristics.

CONCLUSION

The authors concluded that shoulder pain is more frequent and severe in women in the age group of 40-65 years; RCS was the most frequent etiology, also showing an increased prevalence among women. The NVS was shown to be a relevant tool for measuring pain in PSS.

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