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Efficacy analysis of hydrostatic shoulder distention in idiopathic frozen shoulder versus intra articular steroid injection

Noor ul Islam

Medical Officer THQ Hospital Shangla Besham

Muhammad Jamil

Timergara Teaching Hospital Dir Lower

Corresponding author email: jamilkmcite@gmail.com

Naeem Ullah

Saidu Teaching Hospital Swat

Muhamamd Ayaz Khan

Head Department of Orthopedic and Trauma Khyber Teaching Hospital Peshawar

Neelab

Department of Biotechnology University of Malakand

Anila Farid

Asst. Professor, Abbottabad International Medical College

Abstract--Background: Codman was the scientist who first used the term frozen shoulder in 1934. He explained usual characteristics of steady start of pain around insertion of deltoid muscles, sleeping problems and restriction in external movement and active as well as passive elevation, but with a normal radiological appearance. Moreover no satisfactory discussion on the top appropriate procedure of disease management despite of this information of the pathology. A few learnings describe that hydrostatic distension and intra articular steroid injections lessen pain within a short period if given at the start of the disease. Objective: To find and compare the efficacy of hydrostatic shoulder distention with intra articular steroid injection in idiopathic frozen shoulder. Material and methods: 142. (71 in each group) is the total sample taken. Class A patients were injected steroid mixed with Lignocaine intraarticularly while patients in Class B were injected with some another solution. All patients of both groups were allowed for different movement exercises on instruction of a physiotherapist for some days. Patients were then asked at six weeks

follow up. Result: In this study 38 years is mean age in class A while in class B mean age was 40 years. 42% patients were male in class A and female patients were 58% patients on other hand in class B male patients were 40% and 60% female patients. Additionally, class A (Intra articular steroid injection) was fruitful in 93% patients. On the other hand, class B (Hydrostatic Distention) was productive in 87% patients. Conclusion: The study comes to end that IA injection is more productive in idiopathic frozen shoulder and efficacious over hydrostatic distention.

Keywords---(IA) Intra articular steroid injection, hydrostatic distention, IFS (idiopathic frozen shoulder), fibroblast.

Introduction

Codman was scientist who first used the term frozen shoulder in 1934. He explained usual characteristics of steady start of pain around insertion of deltoid muscles, sleeping problems and restriction in external movement and active as well as passive elevation^[1]. Pathology comprises active proliferation of fibroblast in the shoulder capsule joint, also includes transformation of fibroblasts to myoblasts^[2,3] Moreover no satisfactory discussion on one appropriate method of disease management despite of this information of the pathology^[4]. Zuckerman explained the term frozen shoulder not long ago^[5]

In spite of the fact, it is normally thought to be a self limiting state which persists for 2-3 years. A little learning has described that approximately 40% of patients has inflexibility and constant same signs even after 8 years. For that reason, productive therapy that reduces the time span of indication and disorders has the possibility to be of notable price as well as less morbidity^[6]. Different therapies were recommended for frozen shoulder pain relief. Presently, as such no agreement was signed that which is the most successful therapy^[7]. Shoulder pain is ordinary issue. the widespread literature shows that frozen shoulder is ill health that ends in shoulder pain. Its percentage among the population is round about 2% to 5%. It effects women who have age round about 40 to 60 years. The ill health is distinguished by pain, leads to failure of joint movement^[8]. Shoulder pain has been splitted up into three main phases which depends upon its signs, Painful phase (Freezing phase) continues for 2-9 months, Suffering phase (Frozen phase) continues for 4-12 months, Recovery phase (Thawing phase) continues for 5-9 months^[9-10].

In our community, common supposition of sufferer with frozen shoulder are instant and prolong well being from involvement. A few learnings describe that IA injections and hydrostatic distension lessen pain within a short period if given at the start of the disease .A relative study has indicated that 86% victims have acquired absolute relief of pain with IA steroid injection while in hydrostatic distension class, recovery of discomfort was 60%. Alternatively altogether pain improvement in both groups was 97% and 92% respectively. In hydrostatic distension, 63% patients didn't show successful recovery while in IA steroid injection, patient's shoulder joint movement was improved upto 84%^[11 ,12]. On the

other hand, hydrostatic distension was found productive in 93.67% victims^[13,14]. Sufferers from frozen shoulder were exposed to NSAIDs, physiotherapy, IA steroid injections and hydrostatic distensions following anesthesia with contrasting outcome^[15]. Therapy procedure had not approved qualitative. Learnings which concern with IA steroid injection efficacy in idiopathic frozen shoulder are accessible in literature but no comparative study is obtainable practically in local areas regarding recovery of idiopathic frozen shoulder. This research compares either hydrostatic distension is efficacious or intra articular steroid injection.

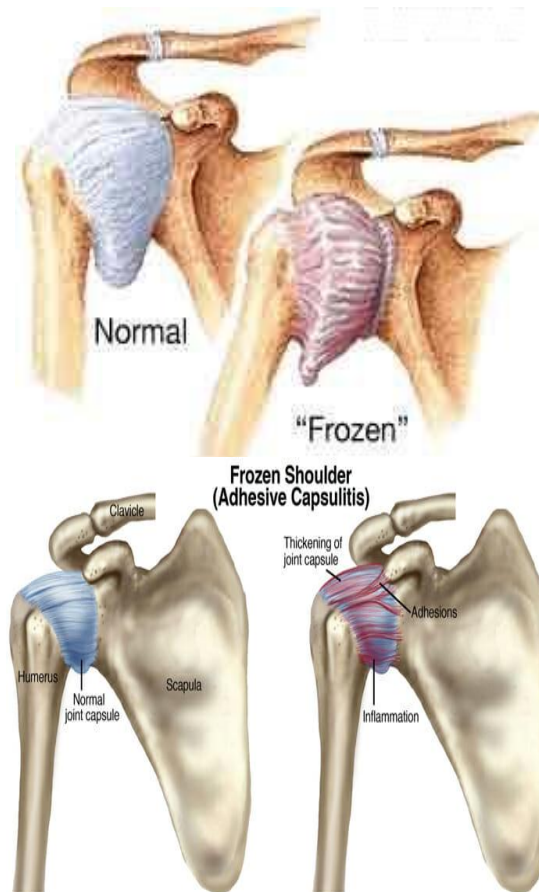


Figure 1: Frozen shoulder

Material and Methods

The patients in the inclusion criteria (All patients having 18-50 years age having idiopathic frozen shoulder pain, may be mild or severe shoulder pain, were included in the study. Lottery method was preferred in diving patients in two classes, then injected IA steroid injection as well as hydrostatic distension. A complete health history of patients having idiopathic frozen shoulder was taken in account. The sufferers experienced intra articular injection. Shoulder skin was cleaned using providine solution of iodine. 1% (3ml) plain lidocaine was injected

into the skin soft tissues which were lying over capsular joint with 23 gauge x1"needle. 8ml of 1% plain lidocaine had been mixed up with 2ml of injection. Depomedrol 80mg/2ml (methyl prednisolone acetate. The patients (Class A) were introduced solution of (lignocaine + steroid) using intra articular method and sufferers(Class B) had been injected distilled water 10ml (using needle proceeding through deltopectoral groove, biceps origin, 1.5" needle and subscapularis with a 21 gauge). The victims of both classes (A and B) had recommended movement of shoulder under instruction of physiotherapist for about three days. When the patient learn the different motions, they were permitted to do practice at home. Then they were asked for six weeks follow up. All details including name, gender, motion practices, pain sensibility of shoulder joint and 6 weeks follow up was recorded in special proforma. All data received was interpreted through SPSS version 17. Mean and standard deviation of age and pain deviation was calculated through Descriptive statistics. Percentages and frequency were calculated for gender, effected side and efficacy. Chi square test was used for comparison to find efficacy between 2 groups. P value ≤ 0.05 was considered as significant.

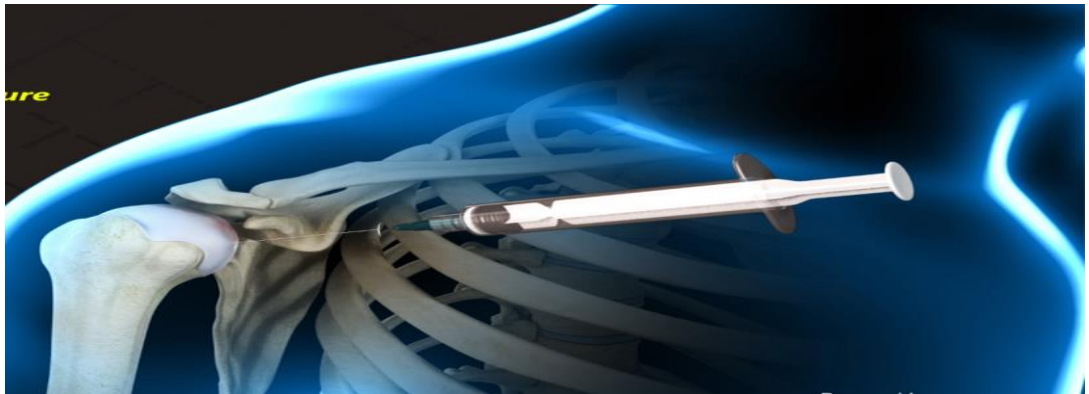


Figure 2. Intra articular injection





Figure 3: Physiotherapy exercises after IA steroid injection

Results

Distribution of age between two classes was analyzed. In class A, age range 20 to 30 years includes 9(12%) patients. 31-40 years age range includes 19(27%) patients, 41 to 50 years age range includes 43(61%) patients. 38 years was mean age with $SD \pm 10.53$. On the other hand, class B, patients age range 20 to 30 years include 10(14%) patients. Patients in age of 31 to 40 years comprises of 21(30%). Patients 40(56%) were 41 to 50 years old. 40 years was mean age as shown in table 1.

Distribution of gender between two classes was studied. In class A, sufferers 41(58%) were female and 30(42%) were male. On the other hand in class B, female patients were 43(60%) and 28(40%) patients were male as shown in table 2. Duration of IFS (idiopathic frozen shoulder) between two categories was studied. Class A includes 23 (33%) patients who had idiopathic frozen shoulder duration ≤ 1 month while 48(67%) patients had duration of IFS > 1 month. Mean duration of idiopathic frozen shoulder was 1 month. On the other hand in category B, 25(35%) sufferers had duration of idiopathic frozen shoulder was ≤ 1 month and 46(65%) patients had duration of IFS > 1 month. 1 month Mean duration of IFS was 1 month as shown in table 3.

Affected portion between two classes was studied. In class A 39(55%) sufferers had affected left portion and 32(45%) sufferers had affected right portion. On the other hand, in class B patients 37(52%) had affected left portion and 34(48%) patients had right portion affected as shown in table 4. Efficacy between two classes was studied. Class A (Intra articular steroid injection) was effective in 66(93%) patients while it was not effective in 5 (7%) patients. On the other hand, class B (Hydrostatic Distension) was effective in 62(87%) patients and was not effective in 9(13%) patients as shown in table 4. Efficacy stratification regarding age, gender, duration of IFS, affected portion is given in table 5,6,7,8,9.

Table 1: Age Distribution

Range of age	(IA Steroid Infection) Class A	(Hydrostatic Distension) Class B
20 to 30 years	12%(9)	14%(10)
31 to 40 years	27%(19)	30(21%)
41 to 50 years	61%(43)	56(40%)
Total years	100%(7)	100%(7)
Mean and SD values	38years \pm 10.53	40 years \pm 9.48

Table 2: Gender Distribution

Gender	(IA Steroid Infection) Class A	(Hydrostatic Distension) Class B
Female	41(58%)	43(60%)
Male	30 (42%)	28(40%)
Total patients	71(100%)	71(100%)

Table 3: Time span of idiopathic frozen shoulder

Time span	(IA Steroid Infection) Class A	(Hydrostatic Distension) Class B
\leq 1 month	33% (23)	35% (25)
>1 month	67%(48)	65%(46)
Sum of time span	100% (71)	100%(71)
Mean and SD	1 \pm 2.77	1 \pm 2.68

Table 4: Affected portion

Affected portion	(IA Steroid Infection) Class A	(Hydrostatic Distension) Class B
Left portion	55%(39)	52%(37)
Right portion	45%(32)	48%(34)
sum	100% (71)	100% (71)

Table 5: Efficacy

Efficacy	(IA steroid infection) Group A	(hydrostatic distension) Group B
More Effective	93%(66)	87(62)
Not effective	7%(5)	13%(9)
Sum	100% (71)	100% (71)

Table 6: Efficacy stratification regarding age distribution

Age	Efficacy	Class A	Class B	P value
20 to 30 years	More Effective	8	9	0.9371
	Not Effective	1	1	

Sum		9	10	
31 to 40 years	Effective	18	18	0.3421
	Not Effective	1	3	
Sum		19	21	
41 to 50 years	Effective	40	35	0.3942
	Not Effective	3	5	
Sum		43	40	

Table no 7. Efficacy stratification regarding gender distribution

Gender	Efficacy	Class A	Class B	P value
Male patients	More Effective	28	24	0.3410
	Not effective	2	4	
Sum		30	28	
Female patients	More Effective	38	38	0.5010
	Not effective	3	5	
Sum		41	43	

Table no 8. Efficacy stratification regarding ifs

Duration	Efficacy	Class A	Class B	P value
≤ 1 month	More Effective	21	22	0.7081
	Not effective	2	3	
sum		23	25	
>1 month	Effective	45	40	0.4034
	Not effective	3	6	
Sum		48	46	

Table no 9. Efficacy stratification regarding affected portion

Affected portion	Efficacy	Class A	Class B	P Value
Left portion	More Effective	36	32	0.4085
	Not effective	3	5	
Sum		39	37	
Right portion	More Effective	30	30	0.4360
	Not effective	2	4	
Sum		32	34	

Discussion

Codman was the first one who used the word frozen shoulder in 1934. He narrated main properties of slow start of pain sensed nearly insertion of the deltoid muscles, sleepless condition on the side which affected. The frozen shoulder involves the pathology of active fibroblastic proliferation in the shoulder joint capsule.

This work reveals that mean age in class A was 38 years using $SD \pm 10.53$. On the other hand mean age in class B was 40 years using $SD \pm 9.48$. In class A, 58% sufferers were female while 42% sufferers were male. Besides, in class B (hydrostatic distension) was effective in 87% patients while in group A (IA steroid injection) was effective in 93% patients.

In another study, the success rate of IA steroid injection was 86%. On the other hand, in hydrostatic distension group, the success rate has been reported up to 60%. So overall improvement in both groups was 97% and 92% respectively [16]. In another study, range of motion of shoulder joint in IA steroid injection was improved up to 84%. On the other hand in hydrostatic distension group, it was effective up to 63% [17,18]. One study has also revealed that the fruitful cost of IA injection lies between 44% to 80%. On the other hand, hydrostatic distension had been effective in 93.67% patients [19]. In ER movement, meta analysis indicates more efficacy for hydrostatic distension over IA steroid [20].

Conclusion

This study comes to end that intra IA steroid is more efficacious as compared to hydrostatic distension for IFS (idiopathic frozen shoulder).

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