ORIGINAL RESEARCH PAPER
Volume - 11 | Issue - 11 | November - 2022 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

INTRA-ARTICULAR LIGNOCAINE AS ANALGESIA DURING MANUAL REDUCTION OF ACUTE ANTERIOR SHOULDER DISLOCATION: AN OBSERVATIONAL STUDY.

Orthopaedics

Iftikhar H Wani MS, Ortho, Assistant Professor, Hospital for Bone and Joint Surgery, GMC Srinagar, Jammu and Kashmir India

Ajaz Ahmad Bhat MS, Ortho, Registrar Orthopaedics, Hospital for Bone and Joint Surgery, GMC Srinagar, Jammu and Kashmir India

Seeyan Mustafa Shah MS, Ortho, Registrar Orthopaedics, Hamdard Institute of Medical Sciences and Research, New Delhi, India.

Mir Samiullah* MS, Ortho, Registrar Orthopaedics, Hospital for Bone and Joint Surgery, GMC Srinagar, Jammu and Kashmir India *Corresponding Author

ABSTRACT

Background: Acute anterior shoulder dislocation needs prompt reduction to provide pain relief. The ideal reduction method should be simple, fast, effective and non- traumatic, with minimal pain, and should not cause further injury to the affected shoulder. Intra-articular lignocaine has been advocated as a means of providing analgesia and subsequent relaxation to the patient. **Aim:** To assess the efficiency of intraarticular lignocaine for reduction of anterior shoulder dislocations. **Patients s & Methods:** Thirty cases of acute anterior shoulder dislocation were reduced using intra-articular local lignocaine injection as a method of analgesia by Rockwood's traction and counter traction method. Ten to Fifteen ml of 1% lignocaine was injected into the glenohumeral joint through a 20 gauge, 35-mm needle. Approximately ten to fifteen minutes were allowed for the local anaesthetic to take effect before any manipulation of the shoulder was attempted. **Results:** The mean age was 37.2years±18.23 SD with majority of patients in age group of 20 to 40 years. 80% of patients were females. Among thirty patients studied 28 (93.3 %) had primary dislocation and in 18 patients (60 %) dominant shoulder was dislocated. Majority of the dislocations were reduced within 6 hours of injury. Pain assessed through application of a Visual Analog Scale during the maneuver revealed scores ranging from two to eight with mean score of 4.39 ± 1.46 SD (p value 0.049). **Conclusion:** We conclude method is not only safe and effective but also reduces hospital stay and has negligible adverse effects making it a popular choice for most orthopedists.

KEYWORDS

Anterior dislocation; Intraarticular; Lignocaine; VAS.

INTRODUCTION

The shoulder joint is most commonly dislocated joint in the body, accounting for nearly 50% of all dislocations[1]. Majority of the shoulder dislocations occurring in an anterior direction (80%) of which 90 % are traumatic and the rest atraumatic[2]. An acute shoulder dislocation is an orthopedic emergency so it should be reduced to its anatomic position as soon as possible. Although several reduction techniques with or without analgesia have been described, ideal reduction method should be simple, quick, effective and non-traumatic, with least pain, complications and cheap[3]. Various methods of reduction of shoulder dislocations have been tried that ranges from Hippocrates to new methods. Most techniques of reduction of shoulder dislocation involve trying to manipulate the humeral head back into its position, in the glenoid. These techniques are of two basic types utilizing either traction or leverage of humerus, although often combinations of the two are employed. In the emergency department, acute anterior shoulder dislocations are commonly reduced with intravenous sedation or suprascapular nerve block[4].

Recently, intra-articular lignocaine has been advocated as a means of providing analgesia during manual reduction of acute anterior shoulder dislocation [3,5]. Some authors have suggested that this would be an excellent choice for improved analgesia, in addition to its low costs and low complication rates. It may permit avoidance of sedative agents while achieving, acceptable degrees of analgesia without intravenous drugs in patients who lack easily obtainable intravenous access. Monitoring of oxygen saturation and electrocardiography may not be required during or after reduction with this method of analgesia. This method allows for a significantly shorter emergency room stay. However, there may be concern among patients receiving intra-articular lignocaine regarding joint reduction, difficulty in determining the correct intra-articular placement of lignocaine, lack of substantial muscle relaxation, potential risk of septic arthritis and systemic lignocaine toxicity[6]. Hence this study was conducted to assess the effectiveness of intra-articular lignocaine for reduction of acute anterior shoulder dislocation in terms of ease of reduction and amount of pain caused by the procedure.

Patients and methods

Thirty patients of acute anterior shoulder dislocation who presented in the Emergency room of Bone and Joint hospital, an associated Hospital of Government Medical College, Srinagar between July 2020 to June 2021 were included for the study. The inclusion criteria included the patients between 20 to 60 years age with isolated anterior dislocation of shoulder without neurovascular injuries. Patients with multiple trauma, associated fracture of the glenoid or tuberosities were excluded.

Clinical tests such as Duga's test, Hamilton ruler test and loss of deltoid bulge; and radiographic findings showing total loss of articular congruity between the humeral head and glenoid cavity were used for the diagnosis.

Description of technique

The method was performed with the patient in a sitting position. The injection site was below the anterolateral acromial edge with a posterolateral approach under standard sterile conditions[7].The direction of the needle was toward the glenoid cavity, and after penetration of the capsule, aspiration of blood indicated the intra-articular position[8].

Ten to Fifteen ml of 1% lignocaine was injected into the glenohumeral joint through a 20 gauge, 35-mm needle. Approximately ten to fifteen minutes were allowed for the local anaesthetic to take effect before any manipulation of the shoulder was attempted. The pain during the reduction was assessed by Visual Analogue Scale (VAS) (1 with minimum pain and 10 being the worst pain). Reduction was done by Rockwood's traction and counter traction method using two sheets. Post-reduction X-rays were performed to confirm the proper anatomic position of the humeral head. The patients were discharged in a position of adduction and internal rotation and immobilized for three weeks in a universal shoulder immobilizer. Gradual movements (pendulum and range of motion) were begun thereafter but combined motion of abduction and external rotation was avoided for 3 weeks.

Statistical analysis

Data was entered in Microsoft Excel 2010 and analyzed by using SPSS version 23. Categorical variables were summarized as frequencies and percentages whereas, continuous variables were summarized as mean and standard deviation. P value <0.05 was considered significant.

RESULTS

Thirty patients were included in the study between July 2020 to June 2021 after meeting the inclusion criteria. Average age was 37.2years±18.23SD (ranging from 20 to 60 years). 14 patients were between the ages 20 to 30 and 24 (80 %) were males. Among thirty patients studied 28 (93.3 %) had primary dislocation and in 18 patients (60 %) dominant shoulder was dislocated. The time duration to reach the hospital ranged from 30 minutes to 7 hours (Average 2.5 hrs.). Eight patients (26.7%) visited to hospital before one hour of injury, 14 patients (46.6%) reached to hospital between 1 to 3 hours of injury and 8 patients (26.7%) reached after 3 hours of injury with couple of patients after 6 hours of injury. Table 1 shows descriptive statistics of the study population.

Table 1: Descriptive Statistics of the Study Population (N=30)

Variables		No. of patients	Percentage
Sex	Male	24	80
	Female	06	20
Age group	20-30 years	14	46.7
	31-40 years	10	33.3
	41-50 years	4	13.3
	51-60 years	2	6.7
Side	Dominant	13	52
	Non-Dominant	7	28
No. of episodes	First	28	93.4
	Second	1	3.3
	Third	1	3.3
Time elapsed to reach hospital	≤1hour	8	26.7
	1-3hours	14	46.6
	>3hours	8	26.7

Pain was assessed by VAS during the maneuver and scores ranging from two to seven with mean score of 4.39 ± 1.46 SD (p value 0.049) were noticed. Table 2 shows interpretation of VAS. During the whole observation period of three weeks we did not notice any superficial or deep infection, any neurovascular injuries or lignocaine toxicity. All the patients were discharged from the ER on the same day after reduction. None of the patients in our study were admitted to the hospital for a long stay more than 6 hrs.

Table 2: Visual Analog Score

Visual Analog Score	No. of patients	Mean ±SD	P value
1	0	4.39 ± 1.46	0.049
2	2		
3	8		
4	10		
5	4		
6	4		
7	1		
8	1		
9	0		
10	0		

DISCUSSION

Intraarticular lignocaine as a means of analgesia for manual reduction of acute anterior shoulder dislocation has become the primary method of choice for orthopedic surgeons due to the fact that it not only provides acceptable degrees of analgesia without intravenous access and patient monitoring, but is also associated with significantly shorter hospital stay, lower complication rate and low cost. Excellent results have been reported in numerous studies when this method was adopted[3,5].

Muscle spasm after the dislocation is the principal problem to come across when performing a reduction[1]. Lignocaine injected exerts its anaesthetic effect both intraarticularly and extraarticularly by stabilizing the membrane of the nerve cells. Both the generation and conduction of pain impulses are inhibited[7].

Suder[7] randomized patients with traumatic dislocation of the shoulder to local intra-articular lignocaine and intravenous anaesthesia with pethidine and diazepam. Thirty-five patients were randomized into intravenous anaesthesia and 33 patients received local anaesthesia. Ten patients treated with intravenous method had respiratory distress and required antidote. No systemic or local side effects and neuro-vascular injuries were recorded with the use of lignocaine. They concluded that local anaesthesia used to reduce acute primary dislocation of shoulder as a simple, safe and well accepted method with significantly fever respiratory complications. Kosnik and co-workers randomized non blinded clinical trial was undertaken to evaluate the effectiveness of local intra –articular lignocaine injection as compared to intravenous anaesthesia and sedation[9]. With reduction rate evaluated as a function of time delay in seeking treatment, patients presenting with 5.5 hours after dislocation were more likely to fail treatment with intraarticular lignocaine group.

Six patients rated pain at six or above in VAS which could be attributed to lack of analgesia probably due to lignocaine injection outside the joint and different pain thresholds in those patients. We defined reduction as 'easy' for those that required very little physical time and effort, and 'tough' for those that required significant physical effort or time close to requiring general anesthesia or multiple efforts to reduce. All the dislocations were easy to reduce except in five cases where either pain or anxiety made it tough. All the dislocations were successfully reduced by Rockwood method in the ER while three cases needed two attempts at reduction. The advantages of this method are, no requirement for the intravenous access and monitoring of the patient after reduction of the shoulder. The cost of the procedure is less and can be carried out with minimum facilities with shorter hospital stay as compared to intravenous sedation group.

CONCLUSION

We believe that intraarticular injection of lignocaine is a safe, easy method to reduce acute shoulder dislocation, especially within 6 hours of dislocation. Easy application without the need for monitoring the patient, no complications like central nervous system depression and cardio-respiratory decompensation, prompt discharge from hospital with acceptable degree of analgesia and cost effectiveness makes it very effective method of pain relief.

REFERENCES

1. Bucholz RW, Heckman JD (eds). Subluxations and Dislocations about the glenohumeral joint. Rockwood and Green's fractures in Adults. 5th ed. vol-2. Philadelphia: Lippincott Williams and Wilkins. 2001; 1109-1201.
2. Canale ST (ed). Recurrent Dislocations: Shoulder: Campbell's operative Orthopedics. 9th ed.vol-2. Missouri: Mosby. 1998; 1354-1398.
3. Tamaoki MJS, Faloppa F, Wajnsztejn A, Netto NA, Matsumoto MH, Belloti JC. Effectiveness of intra-articular lidocaine injection for reduction of anterior shoulder dislocation: randomized clinical trial. Sao Paulo Med J.2012; 130(6):367-72. DOI: 10.1590/S1516-31802012000600003. PMID: 23338733.
4. Gleeson AP, Graham CA, Jones I et al. Comparison of intra-articular lignocaine and a suprascapular nerve block for acute anterior shoulder dislocation. Injury. 1997 Mar; 28 (2): 141-142.
5. Sama HD, Maman AFOB, Kabore RAF, Belo M. Observational Study of Intra-Articular Lidocaine for Management of Shoulder-Dislocation at Sylvanus Olympio University Teaching Hospital, Togo. Int J Clin Anesthesiol.2014;2(2):1028.
6. Wakai A, O'Sullivan R, McCabe A. Intra-articular lignocaine versus intravenous analgesia with or without sedation for manual reduction of acute anterior shoulder dislocation in adults. Cochrane Database of Systematic Reviews 2011, Issue 4. Art. No.: CD004919. DOI: 10.1002/14651858.CD004919.pub2.PMID: 21491392.
7. Suder PA, Mikkelsen JB, Hougaard K, Jensen PE. Reduction of traumatic, primary anterior shoulder dislocations with local anaesthesia. JSES 1994; 3: 288-294.
8. Matthews DE, Roberts T. Intra-articular lignocaine versus intravenous analgesic for reduction for acute anterior shoulder dislocations. A prospective randomized study. Am J Sports Med. Jan-Feb1995 23; (1): 54-58.
9. Kosnik J, Shamsa F, Raphael E, Huang R, Malachias Z, Georgiadis GM. Anesthetic methods for reduction of acute shoulder dislocations: a prospective randomized study comparing intra-articular lignocaine with intravenous analgesia and sedation. Am J Emerg Med. 1999; 17(6): 566 –70.