Humeral shaft fracture associated with radial nerve palsy-a case report

M. Rishitha^{*1}, M. Akasha Sindhu²

^{*1}Department of Pharmacy Practice, QIS College of Pharmacy, Ongole, Prakasam District, AP, India-523272

²HEOR Scientific Analyst at Molecular Connections

Article History

Received: 06-09-2021

Revised: 15-09-2021

Accepted: 28-10-2021

Keywords:

Radial nerve palsy,
Flexion, Intramedullary
Ender nailing,
Radial nerve stumps.

Abstract

Radial nerve palsy was induced by radial nerve compression, which was often caused by humerus bone fracture. This leads to pain, weakness, or loss of function mostly in the wrist, hand, and fingers. We reported a case of a 24-year-old male patient with complaints of swelling of the right-hand wrist joint and pain during extension and flexion while moving. He had a three-month history of mild displaced humeral shaft fracture from a traffic accident and an intramedullary Ender nailing was performed. He now has been admitted with swelling in his right wrist joint and pain while moving his hand. The case was diagnosed as Radial nerve palsy. Surgery was performed, the proximal and distal ends of the radial nerve were separated at the humeral bone's surface. The radial nerve stumps were enough long to be sutured. Our one-month follow-up shows no complications. The majority cases of radial nerve palsy will resolve within a few weeks after surgery, as our patient did, and the most prominent is patient education.

This article is licensed under a Creative Commons Attribution-Non Commercial 4.0 International License.

Copyright © 2021 Author(s) retain the copyright of this article.

*Corresponding Author

M. Rishitha

E-mail: rishitha478@gmail.com

<https://doi.org/10.37022/jiaps.v6i3.251>

Production and Hosted by
www.saap.org.in

Introduction

Radial nerve damage associated with a humeral shaft fracture was one of the most common causes of peripheral nerve palsy [1, 2]. Radial nerve palsy was induced by radial nerve compression, which leads to pain, weakness, or loss of function mostly within the wrist, hand, and fingers [3]. Radial nerve palsy can hinder anyone, especially if the radial nerve has been injured. A physician may perform an EMG and a nerve conduction study after taking the patient's history [4]. X-rays or an MRI may also be used to detect humerus injury [5].

Treatment was usually determined by the cause of the radial nerve palsy. Anti-inflammatory medication can be used to relieve pressure on the nerve if the palsy was caused by

swelling. Splinting can be used to keep the humerus stable and allow the body to heal if it has been injured [4]. Approximately 6% to 12% of humeral shaft fractures are caused by radial nerve palsy [6]. Surgical intervention was not required in 90% of radial nerve palsy cases. However, the radial nerve might be transected or imprisoned at the fracture site in some cases. In these circumstances, the radial nerve should be repaired and healed.

Case Report

This is a case of a 24-year-old male patient admitted into male Orthopaedic Ward with the complaints of swelling of the right-hand wrist joint and pain during extension and flexion while moving. On Examination, Blood Pressure is 130/80mmHg, Pulse rate is 90bpm, Respiratory Rate is 22cpm and SpO2 is 98%. He had a three-month history of mild displaced humeral shaft fracture from a traffic accident and an intramedullary Ender nailing was performed. He now has been admitted with swelling in his right wrist joint and pain while moving his hand. Laboratory investigations were as follows: Haemoglobin- 13gm/dl; Total Leukocyte Count- 7000cells/mm³; Polymorphs- 64%; Lymphocytes- 30%; Monocytes- 2%; Eosinophils- 4%; Platelet Count- 3.8

lakhs; Random Blood Sugar- 93mg/dl; Blood Urea- 26mg/dl; Serum Creatinine- 0.7mg/dl; Serum Bilirubin- 0.7mg/dl; SGOT- 29U/L; SGPT- 32U/L; Total proteins- 6.2gm/dl and Albumin- 3.4gm/dl. After an X-ray examination, the case was diagnosed as Radial nerve palsy (Fig 1).

Fig 1: Radial nerve palsy as a complication of Humeral fracture

The patient is prescribed with Tab. Diclofenac 50mg 1-0-1, Tab. B Complex 1tab 0-1-0, Tab. Calcium 100mg 0-1-0 and Tab. Ranitidine 150mg BD for three days. On fourth day surgery was performed. During surgery, the proximal and distal ends of the radial nerve were separated at the humeral bone's surface. The radial nerve stumps were enough long to be sutured. Post-operative orders include nil by mouth, IV fluids -25% dextrose, RL, NS, Inj. Ceftriaxone 1gm IV BD, Inj. Amikacin 500mg IV BD, Inj. Pantoprazole 40mg IV OD and Tramadol 50mg/2ml IM BD for four days. He is discharged on the fifth day with the following medication: Tab. Ceftriaxone 200mg BD, Tab. Ranitidine 150mg BD, Tab. Diclofenac Sodium 75mg BD, Tab. B Complex 1tab OD and Tab. Calcium 1gm OD. We advised to take rest and our one-month follow-up shows no complications.

Discussion

Direct trauma is the most common cause of humeral shaft fractures, which account for 1% to 7% of all fractures. Radial nerve palsy is a common consequence of humeral shaft fractures, which can develop at the time of injury or later during the healing process. Radial nerve palsy can be full or partial, and it has been reported to occur in between 2% and 17% of all humeral shaft fractures [7]. The optimum treatment for radial nerve palsy induced by humeral shaft fractures are yet to be determined. According to a meta-analysis data from nine studies showed that there was no significant difference in recovery from radial nerve palsy between the initial care techniques, and that non-operation was associated with less risk of complaints. Conservative treatment is advised, as the initial treatment approach has no effect on recovery from radial nerve palsy. However, there

are some case reports, which mentions the radial nerve being ruptured as a result of a closed humeral shaft fracture. According to these reports, if an electrodiagnostic examination reveals no recovery, the radial nerve should be exposed within two months after injury. These suggestions are completely acceptable [8]. The radial nerve palsy in our case was discovered three months after the initial injury. Our one-month follow-up following surgery, however, reported no consequences.

Conclusion

Humeral shaft fractures should be monitored on a regular basis because they have been linked to radial nerve palsy. If an electrodiagnostic examination reveals no nerve recovery or progression of the Tinel's sign, the radial nerve should be explored to confirm its continuity. After surgery, the majority of radial nerve palsy condition will resolve within a few weeks, as our patient did, and patient education is prominent.

References

1. Wang X et al., Secondary radial nerve palsy after internal fixation of humeral shaft fractures, *European Journal of Orthopaedic Surgery & Traumatology*. 2014, 24(3): 331-333.
2. Korompilias AV et al., Approach to radial nerve palsy caused by humerus shaft fracture is primary exploration necessary, *International journal of the care of the injured*. 2013, 44(3): 323-326.
3. Mark Stern, MD et al., Radial Nerve Entrapment, *Department of Orthopaedic Surgery*. 2020.
4. American Association of Neuromuscular & Electrodiagnostic Medicine. 2021.
5. Raghu Teja Sadineni et al., Imaging Patterns in MRI in Recent Bone Injuries Following Negative or Inconclusive Plain Radiographs, *Journal of Clinical and Diagnostic Research*. 2015, 9(10): 10-13.
6. Prodomo J et al., Management of radial nerve palsy associated with humerus fracture, *Journal of Hand Surgery*. 2013, 38A: 995-998.
7. Shao YC et al., Radial nerve palsy associated with fractures of the shaft of the humerus: a systematic review. *The Journal of Bone and Joint Surgery British volume*. 2005, 87: 1647-1652.
8. Thomsen NO et al., Injury to the radial nerve caused by fracture of the humeral shaft: timing and neurobiological aspects related to treatment and diagnosis, *Scandinavian Journal of Plastic and Reconstructive Surgery and Hand Surgery*. 2007, 41: 153-157.