Acta Scientific Orthopaedics (ISSN: 2581-8635)

Volume 4 Issue 9 September 2021

Research Article

Role of Neurophysiological Studies in Prediction of Prognosis of Obstetrical Brachial Plexus Palsy OBPP

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Received: June 29, 2021

Published: August 12, 2021

Abstract

Background: Obstetric brachial Plexus Palsy (OBPP) almost always involves traction of the C5 and C6; nerve roots Resulting in weakness of shoulder function and elbow flexion. Additional involvement of C7, C8 and T1 roots affects elbow extension wrist and hand function. lifelong functional impairment occur in20 to 30% of cases. Mild lesion cannot be distinguished reliably from severe lesions in the prenatal period: only time reveals Whether or not spontaneous recovery will occur. Early identification of severe cases facilitates early referral to specialized centres. where the need for reconstructive nerve surgery can be assessed. Neurophysiologic studies are useful tools for early prognostic assessment of OBPPs. This research will give us data about the role of neurophysiologic studies in prediction of mode of treatment of OBPPs.

Patients and Methods: Case series descriptive retrospective study done in patients with (OBPP) presented to Pediatric Orthopedics Department at Soba University Hospital and underwent surgical correction during the period between (January 2013 and December 2014) and have pre-operative neurophysiologic studies.

Results: In this study we assessed 28 child with obstetrical brachial plexus palsy operated At pediatric orthopedic department, Soba University Hospital from January 2013 to December 2014 twelve male (42.9%) and 16 female (57.1%). Three (10.7%) were below 1 year of age, 20 (71.4%) were between (1 - 10 years). 5 (17.9%) were more than 10 years. Seventeenth (60.7%) with right shoulder affected and 11 children (39.3%) with left shoulder affected. One Child weight less than 2.5 kg (3.6%) while 7 child 25% fell between 2.5 and 4kg, and 20 (71.4%) children were above 4 kg. 4 (14.3%) children had neurophysiologic studies performed before 3 months of age, while the remaining children were all had the neurophysiologic studies after three months of age. The neurophysiologic studies finding showed neuropraxia in 7 (25.0%), axonotmesis in 14 (50.0%) and neurotmesis in 7 (25.0%).

Conclusion: In conclusion, we observed that none of our patients had electromyogram done before surgery. While it is recommended to be done at 1 month as the best time to give accurate prediction of future prognosis. when done within 48 hours following birth it helps to discover the etiology, and it has important medico legal implications. We also found that it is not helpful to rely on the neurophysiological

studies alone in prediction of mode of treatment of OBPP.

Keywords: Obstetric brachial Plexus Palsy (OBPP); C5 and C6 Nerve Roots; Neurophysiological Studies

Background

- (OBPP) almost always involves traction of the C5 and C6 nerve roots, resulting in weakness of shoulder function and elbow flexion.
- Additional involvement of C7, C8 and T1 roots affects elbow extension and wrist and hand function.
- Functional impairment occurs in 20 - 30% of cases.

- Mild lesions cannot be distinguished reliably from severe lesions in the perinatal period; only time reveals whether or not spontaneous recovery will occur.
- Early identification of severe cases facilitates early referral to specialized centers, where the need for reconstructive nerve surgery can be assessed.
- Neurophysiological studies are useful tools for early prognostic assessment of OBPPs.
- This research will give us data about the role of neurophysiological studies in prediction of prognosis of OBPPs.

Objective of the Study

To determine the role of neurophysiological studies in prediction of prognosis of (OBPP).

Methodology

A descriptive retrospective study done in patients with (OBPP) presented to Pediatric Orthopedic Department at Soba University Hospital and underwent surgical correction during the period between (January 2013 and December 2014) and have pre-operative N.P.S.

Result

Discussion

- This is the first study of its kind that deals with the Role of neurophysiological study in prediction of mode of treatment of obstetrical brachial plexus palsy in Sudan.
- This study in unique in that it deals with an issue that has been a controversy for so long.
- In our study we found that 71% of patients had birth wight above 4 kg, which goes with literature as a risk factor for OBPP [1,3,6].
- It has been known for a considerable time that for large babies, shoulder dystocia and breech presentation carry high risks of OBPP [2].
- 93% presented before 3 months of age while 7% after 3 months, however, only 14% had neurophysiological study done before 3 months of age [5].
- Study by van Dijk., *et al*. showed an EMG examination at 1 month as the best time to give accurate prediction of later prognosis [6,7].
- None of our pts had EMG done before surgery, although it is recommended to be done during the period immediately following the birth within 48h when it can with accuracy identify those important but rare cases whose onset antedated the delivery, helping to discover the aetiology, as well as having important medico legal implications and it is also recommended to be done at 1 month as the best time to give accurate prediction of later prognosis [4].
- In our study, the neurophysiological study finding was only neurotmesis in 25%, while 25% showed neuropraxia, and 50% axonotmesis and they underwent surgery, so it is inappropriate to rely on the neurophysiological study alone in prediction of prognosis of OBPP [7].

Strength and Weakness of the Study

- The result assessed retrospectively.
- NPSs Performed in more than one centre and interpretated by more than one neurophysiologist.

- Reliability of the N/C/S attributed to many variables:
- Expertise of the neurophysiologist
- Type of the nerve conduction study machine
- Parameters used for the study.

Conclusion

- In conclusion, we observed that None of our patients had EMG done before surgery, while it is recommended to be done at 1 month as the best time to give accurate prediction of later prognosis, and when done within 48h following birth it helps to discover the aetiology, and it has important medico legal implications.
- We also found that it is inappropriate to rely on the neurophysiological studies alone in prediction of prognosis of OBPP.

Recommendation

- Neurophysiological studies should be done at one month of age for more accuracy and reliance in prediction of prognosis of obstetrical brachial plexus palsy (OBPP).
- EMG should routinely be done alongside with nerve conduction study in combination with clinical assessment for more accurate prediction of prognosis of (OBPP).
- More researches in OBPP need to be done in Sudan to improve its management.

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Volume 4 Issue 9 September2021