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Original Article

FACTORS CONTRIBUTING TO LATE MANAGEMENT OF FOOT DROP SECONDARY TO POST-INJECTION NEURITIS AMONG CHILDREN BELOW 15 YEARS AT THE ORTHOPEDIC UNIT OF KUMI HOSPITAL. A PROPOSED STUDY.

Saudah Namaala, Bosco Mbanda*
Orthopaedic Technology Training School, Uganda Institute of Allied Health and Management Science – Mulago.

Abstract

Background

WHO recognizes foot drop as an impairment of the body structure that may markedly influence the activities and participation of the affected individual. Patients with foot drop excessively flex the knee and the hip to lift high the affected foot to avoid dragging the toes across the ground producing a characteristic steppage gait pattern. Foot drop can be attributed to trauma, multiple sclerosis, stroke, and nerve compression, especially to the common peroneal nerve, however, permanent cases of foot drop are instead due to damage to the sciatic nerve resulting from gluteal intramuscular (IM) injection, usually as a result of iatrogenic actions. An estimated 12 billion injections are administered every year by healthcare practitioners and 50% of these injections are administered unsafely most especially in developing countries as reported by WHO in the 2014 report. The study aims to assess the Factors contributing to the late management of foot drop secondary to post-injection neuritis among children below 15 years at the orthopedic unit of Kumi Hospital.

Methodology

A cross-sectional and descriptive study design will be used to explore the factors contributing to the late management of foot drop secondary to post-injection neuritis among children below 15 years who had inappropriately administered gluteal IM injections. It will involve the use of quantitative data techniques that will be used to summarize the obtained information statistically.

Discussion

Amidst the rising incidences of foot drop secondary to post-injection neuritis among children below 15 years in Uganda. This study seeks to establish the prevalence, impacts, and factors that could be associated with the rising foot drop cases. This will provide baseline data and recommendations for any relevant interventions aimed at combatting the problems by necessary stakeholders who may pick interest in the findings.

KeyWords: *Post-injection neuritis, late management of foot drop, Kumi hospital.*
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Corresponding author: *Saudah Namaala**
Orthopaedic Technology Training School, Uganda Institute of Allied Health and Management Science – Mulago.

Study background.

Study Context

Foot drop is due to the significant weakness of the dorsiflexor muscles of the leg and the foot resulting in gait abnormality (Stevens & Weerkamp, 2015). However, the WHO recognizes foot drop as an impairment of the body structure that may markedly influence the activities and participation of the affected individual (WHO report, 2019). Patients with foot drops excessively flex the knee and the hip to lift high the affected foot to avoid dragging the toes across the ground producing a characteristic steppage gait pattern (Bassel & Rachel, 2019). Foot drop can be attributed to trauma, multiple sclerosis, stroke, and nerve compression, especially to the common peroneal nerve, however, permanent cases of foot drop are instead due to damage to the sciatic nerve resulting from gluteal intramuscular (IM) injection, usually as a result of iatrogenic actions. (Odyedeji, et al., 2015). An estimated 12 billion injections are administered every year by healthcare practitioners and 50% of these injections are administered unsafely most especially in developing countries as reported by WHO in the 2014 report. Given that many people in resource-limited countries perceive injections to be more effective than oral medications, there is a risk that injections can be administered inappropriately by inadequately trained personnel leading to sciatic nerve damage and giving rise to foot drop, and this has been reported to occur throughout the world making it to be one of the major causes of gait abnormality and disability among children (Omole, Mbada, Omole, & Ogunmoyole, 2014).

Electrophysiological findings on the study carried out on the sciatic nerve injection injury (SNII) due to IM injection in 2012, children are more affected than adults because of the less fat pad and lack of muscle bulk relative to adults and are prone to foot drop deformity (Bagis, Adam, Lablebici, Guven, & Celiker, 2012). Foot drops caused by SNII can be misdiagnosed as congenital clubfoot in infants, leading to a

delay in diagnosis and hence resulting in late management (Bigos & Coleman, 2014). The conventional approach to the management of foot drop resulting from post-injection neuritis involves the application of ankle foot orthoses (AFOs) and these are frequently prescribed to improve the walking ability among foot drop patients as they provide passive or dynamic support of ankle movement and they also provide support not only during the stance phase of gait by encouraging lateral stability or improving early stance knee movements, but also in the swing phase to maintain ankle dorsiflexion and facilitate toe clearance (Tyson, Sadeghi, & Nester, 2013).

following the interventions done towards the surgical treatment of foot drop secondary to PIN, the socio-psychological consequences associated with the chronic pain and the gait disturbances seen in foot drop patients cannot be underestimated and may cause patients to seek help for anxiety, or depression symptoms from their health care providers, and the need for chronic pain management (Ninkovic, 2013). Therefore the prognosis of individuals depends on the causal factors, and the chosen therapist intervention and may also be determined through interval assessment with electromyography (EMG) and nerve conduction studies. In Bangalore (India), late management of foot drop secondary to post-injection neuritis attributed to gait impairment in about 80% of the affected children, and these further presented with other deformities of the foot including equinovarus. The affected children also experienced a lot of pain as well as other problems in using the limbs (Kumasuraswamy & Sahaya, 2013).

In low and middle-income countries of Africa especially in Nigeria, pediatric cases accounted for about 90% of the 160 foot-drop patients with a history of post-injection neuritis, and following the impact of late management of these cases, about 70% of these patients had chronic equinovarus which hindered physiotherapy intervention thus giving a poor prognosis (Fapojuwo, Akinlade, & Gbiri, 2012). Although some data exists regarding the medical complications following gluteal IM injections, no estimates have been published regarding the burden caused by the injection trauma, and the affected individuals usually present with foot drop resulting in varying degrees of motor disability depending on the timing and the duration of corrective measures instituted (Langunju & O.O, 2012). In Uganda, cases of foot drop secondary to post-injection neuritis are very common throughout the country necessitating considerable care and yet the factor contributing to the late management of these cases within Uganda or elsewhere in East Africa has not been quantified, impending efforts to estimate resource needs for these conditions(Sitati, Naddumba, & Beyeza, 2012). Thus the study will aim to determine the factor contributing to the late management of foot drop secondary to post-injection neuritis among children below the age of 15 years at the orthopaedic unit of Kumi Hospital in Kumi, a northeastern district of Uganda anecdotally known to have these cases.

Problem

At Kumi Hospital, delay in case presentation of foot drop secondary to Post Injection Neuritis is still of concern and a large number of children suffering from this condition are frequently being reported to the orthopedic unit at late stages of the deformity. Cases of foot drop secondary to post-injection neuritis require early recognition, investigation, and management, and the caretakers should take the initiative to report these cases early to the health facilities when suspected to ensure immediate and optimal management to maximize the likelihood of recovery and alteration of prognosis. Despite the interventions done by the organized administration of Kumi Hospital through the outreach programs held in the outlying villages by the rehabilitation team and patients are seen with a wide range of problems, about 15 patients report to the orthopedic unit monthly with foot drop secondary to post-injection neuritis (report by Mr. Twongirwe Benjamin, the head of orthopedic workshop, Kumi hospital). However, 70% of these patients report abnormal gait and other ankle-associated conditions like chronic equinovarus, joint stiffness, pressure ulcers on the affected foot, and inability to freely ambulate. Furthermore, the orthopaedic technologists together with the physiotherapists have tried to intervene to manage these cases conservatively to correct the deformity and restore function due to the inability of the caretakers to afford the surgical intervention but this yet gives a poor prognosis. Therefore the researcher sought to carry out a study to determine the implications resulting from late management of foot drop secondary to post-injection neuritis among children below 15 years at the orthopaedic unit of Kumi Hospital to come up with appropriate measures and address the gap to prevent further complications.

METHODOLOGY

Study design

A cross-sectional and descriptive study design will be used to explore the factors contributing to the late management of foot drop secondary to post-injection neuritis among children below 15 years who had inappropriately administered gluteal IM injections. It will involve the use of quantitative data techniques that will be used to summarize the obtained information statistically.

Study area

The study will be carried out in Kumi Hospital. Kumi Hospital is located in Ongino Sub County Adekisi village which is about 8km from Kumi town. Kumi district is located in the eastern region of Uganda between Soroti city and Mbale city and is about 271.3km from Kampala capital city along the Jinja highway. The main language spoken is Itesot together with English. Agriculture and animal husbandry are the major economic activities in the district followed by small-scale businesses. Kumi Hospital is located between latitude 1031’39.1’N and longitude

33058'33.4'E. It is a general hospital with an outpatient department, laboratory, radiography, maternity, theatre, pediatric ward, Optometry unit, orthopedic ward and clinic, and orthopedic workshop.

Study population

The study will involve 30 respondents, all children below 15 years presenting with complications following late management of foot drop secondary to post-injection neuritis, and their caretakers at the orthopedic unit of Kumi Hospital.

Sample size determination

The sample size will be determined using a modified Kish and Leslie formula (1964, 1965)

The sample size shall be collected according to the following formula

From the Formula, $n=\frac{Z2PQ.}{d2}$ Where;

Where: n = total number or sample size

d = maximum differences between sample mean population.

P = the expected number of respondents targeted is unknown, 2% will be considered since the implications are not known, which will be equal to 0.02.

Z = area under normal curve corresponding to the desired confidence level.

At 95% confidence level,

Z = 1.96

P = 2% = 0.02

Q = 1-p, 1-0.02

= 0.98

d = confidence level is ±0.05

Therefore $n=\frac{1.962\times0.02\times0.98}{(0.05)2}$

n = 30.118144

Therefore a sample of 30 respondents will be sampled for the study.

Sampling technique

A convenient sampling technique will be used where the researcher will study the respondents and only those who will be present at the time of data collection will be considered in the study and will include both patients and caretakers. The respondents will be sampled on the first come, first serve principle.

Sampling procedure

Questionnaires with serial numbers will be used and questions asked to the respondents and they will fill in the given answers correctly. Questionnaires will be collected from the research assistants and checked for completeness on that very day.

Data collection methods

Data will be collected by the researcher using questionnaires which will have open-ended and close-ended questions for both qualitative and quantitative data. The questionnaires will be filled in by the respondents and where need be, the researcher and the research assistants will help to fill in the answers provided by the respondents correctly in ink.

Data collection tools

The researcher will use questionnaires with both closed and open-ended questions to collect both qualitative and quantitative data from the respondents. Pens and pencils will also be provided to the respondents during the study and the data collected will be checked for completeness using checklists.

Data collection procedures

The researcher will approach the Kumi Hospital Research and Ethics Committee and the department head of the orthopedic unit to obtain their consent to carry out the study. The researcher will greet the respondents introduce himself to them and explain the purpose of his presence in the place and the benefits of the study. The researcher will then conveniently enroll the respondents into the study and informed consent will be obtained from them however, ensuring that a high degree of confidentiality is observed. Data will be obtained from hospital record books and also from the respondents using self-administered questionnaires with the help of two research assistants who will be trained on how to collect data. The questionnaires will be distributed to the respondents. Any question that will not be fully understood will be explained to them and the answers will be filled in the questionnaires. The research assistants will help to interview and translate the questions for the respondents who will be unable to read English. The filled questionnaires will be placed in a bag for proper protection up to the working station where data obtained will be processed and analyzed.

Study variable

Dependent variables

The dependent variables are the presumed effects of the independent variable which are implications resulting from late management of foot drop deformity secondary to post-injection neuritis.

Independent variables

The independent variable for the study will be the presumed cause of the dependent variable which is: late management of foot drop secondary to post-injection neuritis among children below 15 years.

Quality control

For quality results, clear inclusions and exclusions will be done. Questionnaires will be double-checked for

completeness and relevance. The data collected will also be checked for validity and reliability.

Pretesting data collection tools

Pretesting the questionnaires among friends before the time of data collection to ensure that the questionnaires are valid and reliable to collect the information intended to giving chance to the researcher to eliminate invalid and unreliable questions. The respondents' perceptions and reactions will be tested as the attitude toward the whole process to devise means of improvement. The time required to accomplish the questionnaires will also be determined.

Inclusion Criteria

All children below 15 years with complications following late management of foot drop secondary to post-injection neuritis and their caregivers who will be at the hospital during data collection and have obtained consent.

Exclusion Criteria

The study will exclude all children above 15 years with complications following late management of foot drop secondary to post-injection neuritis and their caregivers who will refuse to consent. Health practitioners at the Orthopaedic unit will also not be included in the study.

Data analysis and presentation

Data obtained from the respondents will be categorized and then processed, analyzed, and summarized manually on a data master sheet using a calculator. Descriptive statistics of the percentages and frequencies will be used to summarize the variables of the study. Normality for dependent continuous data will be assessed using two scores. The assumptions required for each test will be checked before the analysis is done. For qualitative data analysis involving an explanation of the information obtained from the empirical literature, tables, pie charts, and graphs will be used to present the results. Interpretation and discussion of data will be made based on research objectives, conclusions, and recommendations.

Ethical considerations

An introductory letter from the principal tutor of Orthopaedic Technology Training School in UIAHMS-Mulago will be secured. The letter will be presented to the Kumi Hospital Research and Ethics Committee will introduce the researcher to the orthopedic workshop and the rest of the staff following approval from the research committee and a letter that will allow him to collect data will be issued. Informed consent will be obtained from the respondents after explaining the nature and the purpose of the study. It will be emphasized that participation will be voluntary and that withdrawal from the study will be done at any time without penalty. The respondents will be assured the study will be conducted privately and the information will be treated with confidentiality.

Study limitations and solutions

Problems such as scarcity of funds, limited time for collecting data, incorrect information which may be given by the respondents, failure of some respondents to comply, and language barrier may be faced. They are likely to be through seeking funds from sponsors from friends. Research assistants will help him to collect data in the limited time provided. Respondents who fail to comply will be overcome through counseling explaining the purpose of the study and ensuring confidentiality as well as dropping those who will quit the study. The language barrier will be settled by getting friends who will translate the researcher's words into a language that will be easily understood by the respondents before they are enrolled to ensure that the participants give correct information.

Dissemination of results

The results from the study will be compiled and copies will be submitted to the Orthopaedic Technology Training School in UIAHMS-Mulago, Uganda Allied Health Examination Board, and Kumi Hospital.

Discussion

Amidst the rising incidences of foot drop secondary to post-injection neuritis among children below 15 years in Uganda. This study seeks to establish the prevalence, impacts, and factors that could be associated with the rising foot drop cases. This will provide baseline data and recommendations for any relevant interventions aimed at combatting the problems by necessary stakeholders who may pick interest in the findings.

List of abbreviations.

AFOs: Ankle Foot Orthoses
EMG: Electromyography
IM : Intramuscular
PIN: Post Injection Neuritis
SNII: Sciatic Nerve Injection Injury
UIAHMS: Uganda Institute of Allied Health and Management Sciences- Mulago
WHO: World Health Organization

REFERENCES

1. Bagis , S., Adam, M., Lablebici, U., Guven, A., & Celiker, A. (2012). Sciatic nerve injury due to intramuscular injection. *Electrophysiological findings and one-year follow-up*, 913-917.
2. Bassel, E.-O., & Rachel, W. (2019). Concepts in foot drop management. *Review of the current literature*, 37-45.

3. Bigos, S., & Coleman, S. (2014). Foot deformities secondary to gluteal injection in infancy. *J Pediatr Orthop*, 560-563.
4. Fapojuwo, O., Akinlade, T., & Gbiri, C. (2012). A three-year Review of Sciatic Nerve Injection Palsy in the Physiotherapy Department of Nigeria Specialist Hospital. *African journal of medicine and medical sciences*, 389-393.
5. Kumasuraswamy, M., & Sahaya, N. S. (2013). Post gluteal injection foot drop: Tibialis Posterior transfer. *International Journal of Neurology and Neurosurgery*, *5*.
6. Langunju, I., & O.O, O. (2012). Analysis of disorders seen at the Paediatric Neurology Clinic, University College Hospital, Ibadan, Nigeria. *West Africa journal of medicine*, 326-330.
7. Ninkovic , M. (2013). Neuromusculotendinous transfer; an original surgical concept for the treatment of foot drop with long-term follow-up. *Plastic and Reconstructive Surgery*, 438-445.
8. Odyedeji, O., Emelile, P., Adebami, O., Ojunlusi, J., Oyedeji, G., & Oluwafemi, S. (2015). Injection-induced sciatic nerve injury among children seen at Nigerian Physiotherapy unit. *The internet journal of Third world medicine*, 2.
9. Omole, J., Mbada, C., Omole, K., & Ogunmoyole, Y. (2014). A-10 year Review of Prevalence, Pattern and Physiotherapy intervention in children with post injection sciatic nerve injury in Nigeria Teaching Hospital. *Nigeria Journal of Health Sciences*, oo-oo.
10. Sitati, F., Naddumba, E., & Beyeza, T. (2012). Injection-induced sciatic nerve injury in Ugandan children. *Trop Doct.*, 223-224.
11. Stevens, F., & Weerkamp, N. (2015). Foot drop. *BMJ*.
12. Tyson , S., Sadeghi, D. E., & Nester , C. (2013). A systematic review and meta-analysis of the effects of ankle foot orthosis on gait biomechanics after post-injection sciatic nerve injury. *Clinic Rehabil*, 879-891.

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