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A three year review of sciatic nerve injection palsy in the physiotherapy department of a Nigerian Specialist Hospital.

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Summary

Sciatic Nerve palsy associated with intramuscular injection is a major cause of disability among children under 6-years old in the developing Countries. A retrospective study was conducted with an objective to review cases of all patients with Injection induced sciatic nerve palsy managed at the Physiotherapy Department, State Specialist Hospital, Akure Ondo State over a period of 3 years (January 2004 and December 2006). The case notes of these patients were reviewed and the details of the patients' sex, age and presentations were obtained. Records of 160 patients presenting with Sciatic Nerve Injection Palsy were studied. Males accounted for 60% while 40% were females. They were aged from 3 months to 70 years with paediatric cases accounting for 90% of cases. All of the patients had intramuscular injections following febrile illness. Muscle paralysis with foot drop accounted for 41% cases while 59% had varying degrees of muscle paresis, without foot drop, and 4% had equinovarus deformity as a complication of the paralytic foot drop. Sciatic Nerve Injection Palsy especially in children is a common referral to the Physiotherapy Clinic. There is therefore need for caution in the administration of gluteal intramuscular injections particularly in children.

Keywords: *Sciatic, nerve, injection, paralysis, physiotherapy*

Résumé

La paralysie du nerf sciatique associée à l'injection intramusculaire est une cause majeure parmi les enfants de moins de 6 ans dans les pays sous-développés : une étude rétrospective était conduite dans l'objectif de revoir les cas des patients ayant une injection induisant la paralysie du nerf sciatique soignée dans le département de physiothérapie à l'hôpital des spécialistes v de la

province ; Akure dans l'état d'Ondo, durant 3 ans de Janvier 2004 décembre 2006. Les registres des patients étaient revus et d'autres détails anthropométriques étaient obtenues : Les données de 160 patients souffrant d'une paralysie du nerf sciatique ont été étudiés. Ils y avaient 60 % de males et 40 % de femelles, ages entre 3 à 70 ans avec des patients pédiatriques de 90 %. Tous les patients avaient reçu des injections intramusculaires suivi de la fièvre, la paralysie des muscles avec une paralysie de la jambe et 4 % avaient des déformations comme complications de la paralysie. Les patients ayant la paralysie du nerf sciatique sont très communément référés en physiothérapie clinique. Il est donc nécessaire d'être prudent dans l'administration des injections intramusculaires gluteales chez les enfants.

Introduction

The WHO through the Global Polio eradication initiative advocates for the active search and prompt report of any cases of acute flaccid paralysis (AFP) by health practitioners. This is to ensure a rapid identification of potential polio cases in previously polio-free areas and the attainment of a polio-free Africa [1]. Traumatic injection palsy constitutes a significant percentage of reported cases of AFP [2] and affects in almost 100% of the cases, two major nerves of the body, the sciatic and the radial nerve [3, 4]. It is estimated that, well over 16 billion injections per year are given in the developing world with an average annual rate of 3.4 injections per person [5] of which 50% are thought to be unsafe and unnecessary, thus exposing patients to the risk of possible complications [6].

The WHO through the "safe injection global network" (SIGN) suggested a broad multidisciplinary approach addressing technologies, policies, standards, systems and behavioural modifications in order to ensure injection safety and therefore urges the international communities to call for a right to safe and appropriate use of

injections worldwide [7]. Safe injection practice is an issue of medical ethics, patient safety and quality of care [8], it is also essential for maintaining public confidence and extending the reach of immunization programmes [9]. The complications of traumatic injection injury are well documented [8, 9, 10, 11, 12] yet cases of traumatic injection injury persist. Unsafe injections may result in multiple complications particularly infections such as Hepatitis B, Hepatitis C and HIV [9], abscesses, muscle fibrosis and deformities [10]. In addition injections may lead to nerve injury causing acute flaccid paralysis of the limb [3] with the resultant life long disabilities [12].

Lesions involving the sciatic nerve comprise the largest as well as a very important subset of lower-extremity nerve injuries [13], and injection remains the most frequent cause of serious injury to the buttock-level sciatic nerve [11]. Patients with poor gluteal covering, such as infants and children, the elderly individuals, constitutionally thin or chronically ill and debilitated individuals are frequently afflicted [11]. Injection injury to the sciatic nerve in the gluteal region may result in radicular pain, impairment or loss of sensation, foot drop and loss of extensor muscle function [12]. The principal contributing factors in the pathogenesis of traumatic injection injury include the inadequate knowledge of the anatomy of the muscles into which injections are made, anatomic variations in the course of a nerve, the thickness of the overlying fat and the technique of intramuscular injections [10] which results in trauma to the sciatic nerve.

Kline *et al* [11] in a study conducted in a U.S hospital investigated 380 cases of sciatic nerve injuries, over a 24-year period. He observed that 230 (60%) of the patients had the injury at the buttock level, with injection injuries comprising more than half of these cases. Pandian *et al* [14], in a review of 66 patients with nerve injury following intramuscular injection, referred to the Neurophysiological Laboratory at Christian Medical College in India over the period of 13 years (1990-2003), reported 36(55%) cases of sciatic nerve palsy secondary to gluteal injections. Fatunde and Familusi [15] did a retrospective study of all children with a diagnosis of sciatic nerve injury in the University College Hospital, Ibadan, Nigeria during a 12-year period (1988-1999). 27 children, aged 5 months to 12 years, with a diagnosis of post injection sciatic nerve injury were recorded. Hamzat and Omotade [16] also in review of paediatric cases in the Physiotherapy Clinic, University College Hospital, Ibadan from 1999–2004 observed that sciatic nerve injection palsy accounted for 95(72%) of cases of Acute Flaccid paralysis. The prevalence of post injection injury in this environment

(Ondo State, Nigeria) is not known; also the increasing turnout of cases of acute flaccid paralysis in the Physiotherapy Department of the State Specialist Hospital, Akure Ondo State in recent time justified the need for this study. Therefore, the purpose of this study is to investigate the pattern of cases of injection palsy of the sciatic nerve over a period of 3 years (January, 2004-December, 2006) as seen at the Physiotherapy Department of the State Specialist Hospital, Akure Ondo State, Nigeria in line with the WHO (AFP) Surveillance.

Methods

The case notes of all patients with sciatic nerve palsy seen at the Physiotherapy Department of the State Specialist Hospital, Akure Ondo State between January 2004 and December 2006 were reviewed for this study. The following data were extracted from the case notes, age, sex, injection site, prevailing illness, immunization history, specific physician diagnosis, venue of injection, time of presentation, Period between onset of neurological signs and the time of first physiotherapy consultation, method of treatment, duration of treatment and outcome of management. The inclusion criteria for this study were

1. history of intramuscular gluteal injection
2. History of onset of neurological signs and/or deficit less than 24 hours after administration of injection. This is to ensure that cases of poliomyelitis are not included in the study for paediatric cases. If neurological signs occur after 24 hours, the case is more likely to be that of poliomyelitis. To ensure proper and adequate screening we decided to delimit the cases those with onset of neurological signs not later than 24 hours after injections were given. [8]
3. Symmetrical affection of the injected limb and the muscle groups supplied by the affected sciatic nerve
4. Cases screened and negative for poliomyelitis. [8]

Stool samples of paediatric patients that reported for treatment within 60 days of onset of symptoms were collected for poliovirus isolation, through the focal person for the WHO Global Polio Eradication Initiative [8].

Results

A total of 2655 patients presented at the Physiotherapy Department of the State Specialist Hospital, Akure, Ondo between January 2004 and December 2006 out of which 160 (6%) cases had a

clinical diagnosis of sciatic nerve palsy. 60% (96) were male and 40% (64) were female with age ranging from 3 months to 70 years. Table 1 shows the age distribution of cases across the years. The

injections following febrile illnesses although records did not show the names or type of drugs injected. More than half 60% (97) reported within 4 weeks of onset of symptoms (Table 3). Most of the cases were

Table 1: Age Distribution of patients with sciatic nerve palsy (SNIP) N=160

Age (yrs)	No. of cases				
	2004	2005	2006	Total	%
0-2	25	20	18	63	39.0
3-5	11	18	20	49	31.0
6-8	6	8	8	22	14.0
9-12	3	2	5	10	6.0
13-20	6	1	-	7	4.0
21-30	4	1	1	6	4.0
31-40	1	-	-	1	1.0
51-70	2	-	-	2	1.0
Total	58	50	52	160	100.0

highest number of cases was seen in 2004 while the least was seen in 2005. The age group 0-2 years had the highest number of cases with 39% (63) cases. Most of the patients seen were paediatric cases (0-12 years) accounting for 90% (144) of the total number of sciatic nerve palsy cases seen. Total number of paediatric cases seen in the department in the years reviewed was 815 thereby making sciatic nerve palsy account for 17% of paediatric cases (Table 2). Patients with foot drop due to total paralysis

Table 3: Period between onset of Neurological Signs and the time of first physiotherapy consultation. N=160

Time	No. of cases				
	2004	2005	2006	Total	%
1-14 days	26	18	27	71	44.0
15-28 days	6	7	13	26	16.0
29days-3months	12	18	10	40	25.0
4months-12months	7	7	2	16	10.0
> 1year	7	-	-	-	5.0
Total	58	50	52	160	100.0

seen at the peak of the rainy season or during the time of the year when there are lower temperature (Figure 1). Physiotherapy management included a thorough assessment of the patient, electrical stimulation (twice per week) to the affected muscles,

Table 2: Distribution of paediatric cases presented N=160

Case	No. of cases				
	2004	2005	2006	Total	%
Sciatic nerve palsy	45	48	51	144	18.0
Erb's palsy	51	63	81	195	24.0
Cerebral palsy	44	21	41	106	13.0
Talipes equinovarus	42	29	20	91	11.0
Others	125	65	89	279	34.0
Total	307	226	282	815	100.0

of the dorsiflexors and evertors of the Foot accounted for 41% (65) of cases, while 59% (95) had varying degrees of muscle weakness without foot drop. All patients had neuralgia of the sciatic nerve. All cases were unilateral with 49% (78) having injection injury on the right buttock while 51% (82) had on the left. In 67% (106) of cases, the injection was administered at private hospitals, clinics and chemist shops while 25% (40) had injections given at public hospitals which included maternity centres, general hospitals and primary health care centres. All the patients had

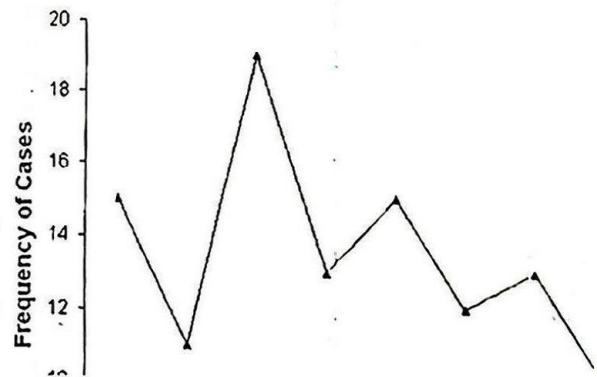


Fig. 1: Newly registered cases of SNIP per quarter between January 2004 and December 2006

Soft tissue mobilization and strengthening exercises to the affected lower limb, mobilization of joints of the affected lower limb to improve or maintain the present range of movement, functional splints to enhance function, prevent foot drop and formation of contractures of the Achilles tendon. Outcome of treatment could not be fully and objectively assessed due the inconclusiveness of the records as there was no indication of discharge after recovery in all of the

records seen. However patients showed significant improvement, complete relief of neuralgia, increase in affected muscular strength and functional capability after treatment.

Discussion

This present study observed 160 cases of sciatic nerve injection injury in 3 years out of which 90% were paediatric cases. This number appeared to be higher than what was seen in literature. Fatunde and Familusi [15] reviewed 27 cases in children over a period of 10 years. Hamzat and Omotade [16] also reviewed 95 paediatrics cases in 5 years while Kline *et al* (1998) reviewed 136 cases (which only 10 were children) over a period of 24 years. This may imply that sciatic nerve injection palsy occurs commonly in this environment especially among children when compared to findings from other environments. The fact that majority of these patients were five years and less as seen in this study and also in the findings of Fatunde and Familusi [15] and Hamzat and Omotade [16] implies that this group of children are highly susceptible to sciatic nerve injection injury in this environment. This may be due to the general lack of awareness about the immensity of the condition and the lack of appreciation of the resultant effect on the child's physical and social well being as life long disabilities such as equinovarus deformities of the foot can occur which can ultimately distort the child's ambulatory pattern later in life. This has grave implications on the community and is of immense public health concern if appropriate measures are not taken in time to reduce the occurrence. This calls for the need for re-evaluation of health care services provided to children in health centres, hospitals and dispensing shops in and around Akure and its environs so that appropriate steps can be taken to reduce the occurrence and ultimately reduce the amount of resources (time and financial) spent to rehabilitate those affected by sciatic nerve palsy. It was also observed that elderly people were also affected by sciatic nerve palsy although they accounted minority of cases seen. Kline *et al* [11] observed that older patients were more affected by injection induced sciatic nerve palsy than other adult age groups because they were often thin of age and/or debilitating disease thereby having less gluteal covering predisposing them to this kind of injury.

The result of the study showed that most of the patients in this study were given injection at private clinics and private hospitals. This is in agreement with the report of Fatunde and Familusi [15] and Monsoor [8] who observed that most of the patients presenting

with sciatic nerve palsy had received intramuscular injections, in privately owned medical facilities, where the presence of unqualified and uncertified health personnel who had minimal training and knowledge on how to administer injections was more likely. It was also observed that most of the parents of the children presented for treatment were not aware of the drugs administered for Intramuscular injections. Febrile illness was the major reason for administration of injection. This finding is corroborated by the reports of Sharma and Kale [2], Mansoor [8] and Fatunde and Familusi [15], that fever of about one or two days duration was the most common indicator for injections.

Only 71(44%) reported for Physiotherapy treatment within 2 weeks of onset of symptoms after administration of injections, while the 6 cases with the complication of foot equinovarus deformity reported for Physiotherapy after 52 weeks. This shows that many of the patients do not report promptly for treatment, thus giving rise to avoidable secondary complications such as deformities, fibrosis, disuse atrophy, and muscle inhibition. A major cause for the delay in presentation for treatment may be the late referral of patients by health workers due to the belief that the condition would resolve on its own. A major limitation was inability to fully and objectively assess the outcome of management as most of the records were inconclusive and did not show discharge summaries after recovery. Poor attendance for Physiotherapy treatment due to financial constraints, poor compliance with treatment regimen and the habit of self discharge without concluding treatment when there is an appreciable or significant improvement may be another reason for this. Also poor record keeping habits by clinicians could be a factor as proper updated records were not being kept as and when due. However most of the patients showed significant improvement as there was relief of pain, appreciable increase in muscular strength of affected lower limb and increase in functional capacity of the patients after treatment. Parents should be advised and encouraged on the need for regular Physiotherapy attendance for their wards as this will enhance full recovery. Physiotherapists and clinicians should also fully embrace the culture and practice of proper record keeping.

Based on the outcome of this study it is hereby concluded that there are cases of sciatic nerve injection palsy among the study population, which is related to the inappropriate administration of intramuscular injections at the gluteal region. Children and infants who receive injections for treatment of

febrile illness from private clinics are mostly affected with many presenting late for Physiotherapy treatment. Based on the findings of this study, it is hereby recommended that public awareness should be intensified on the dangers of unsafe and unnecessary injection procedures among children. The public should be advised on and discouraged from patronizing quacks, questionable health care centres and health care providers. Public awareness should also be intensified on the need for protection of children against mosquitoes and excessive chills which are common during the rainy season.

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