Original Article

Post Polio Paralysis: A Clarion Call For Surgical Re-Awakening

La paralysie postpoliomyélitique: un appel au réveil chirurgical

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Abstract

Back ground: Post polio paralysis is a grave complication if poliomyelitis. The victims can be rehabilitated to ambulate erect by reconstructive operations, use of orthosis and physiotherapy. This study assesses the problems of post polio paralysis, rehabilitative interventions and calls for a surgical reawakening in this regard.

Patients and Methods: A retrospective study of management of children with severe post polio paralysis is presented

Results: Eight patients aged between 8 and 16 years with varying degrees of disabilities and deformities were managed. Six of them crawled on the ground and only two of them attended school. Reconstructive surgery and physiotherapy enabled all to ambulate in erect position using calipers and crutches.

Conclusion: Children with post polio paralysis can be rehabilitated by reconstructive surgery and physiotherapy. Dwindling interest of surgeons in surgery of poliomyelitis needs to be reawakened.

Keywords: Post polio paralysis, Reconstructive surgery, Physiotherapy, Rehabilitation

Resume

Arrière-plan: La paralysie postpoliomyélitique est une complication grave de la poliomyélite. A l'aide de la chirurgie reconstructive, de l'emploi de l'orthèse et de la kinésithérapie, on peut réhabiliter les victimes pour leur permettre de marcher debout. Cette étude évalue les problèmes de la paralysie postpoliomyélitique, les interventions rééducatives et en appelle, à cet égard, à un réveil chirurgical. ***Patients et méthodes:*** Nous présentons une étude rétrospective de la gestion d'enfants atteints d'une sérieuse paralysie postpoliomyélitique. ***Résultats:*** Nous avons géré huit patients âgés de 8 à 16 ans atteints de diverses formes d'infirmités et de difformités. Six d'entre eux se traînaient par terre et deux seulement fréquentaient des écoles. La chirurgie reconstructive et la kinésithérapie leur ont permis à tous de marcher debout avec des étriers et des béquilles. ***Conclusion:*** Les enfants souffrant de la paralysie postpoliomyélitique peuvent être réhabilités par la chirurgie reconstructive et la kinésithérapie. Il est nécessaire d'inciter les chirurgiens à s'intéresser davantage à la chirurgie poliomyélitique. ***Mots-clés:*** Paralysie postpoliomyélitique, chirurgie reconstructive, kinésithérapie, réhabilitation.

Introduction

Poliomyelitis has remained a scourge in children the world over since the second half of the last century. It is an acute viral disease that is caused by an entero-virus and transmitted via the faeco-oral route. Global attention to the problems of the aftermath of poliomyelitis resulted in efforts geared towards eradication of the disease via massive immunization. By the 1980s, polio had largely become eradicated in the world but for a few countries where it remained endemic. A recent epidemic in ten African countries was successfully contained by massive immunization[1]. The virus has a predilection for anterior horn cells of motor neurons of the spinal cord and brainstem resulting in various degrees of paralysis and death through asphyxiation in cases where respiratory muscles are involved.[1] Survivors undergo a life-long period of progressive disabilities, deformities and constitute a burden both to the society and the surgeon. The victims usually require continued reconstructive procedures in order to achieve reasonable ambulation[2,3].

Surgeons appear to have lost interest in the rehabilitative surgical procedures for severe aftermath of poliomyelitis. This prospective study highlights the need for continued interest in the surgery of poliomyelitis and to call attention to the continued plight of the victims.

Patients and Methods

This is a prospective study of the outcome of management of patients with severe post polio-paralysis. Patients were identified by the Reverend Sisters of Our Lady of Apostle's order working in rural settings around the middle belt of Nigeria. The patients were approached and persuaded to come for

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Table 1(a): Muscle charting of upper limbs

Muscle Groups	Patients 1	2	3	4	5	6	7	8
Shoulder Flexor	Lt. 5	5	5	5	5	5	5	5
	Rt. 5	5	5	2	5	5	5	5
Shoulder Extensors	Lt. 5	5	5	5	5	5	5	5
	Rt. 3	5	5	2	5	5	5	5
Shoulder Adductors	Lt. 5	5	5	5	5	5	5	5
	Rt. 5	5	5	4	5	5	5	5
Shoulder abductors	Lt. 5	5	5	5	5	5	5	5
	Rt. 5	5	5	4	5	5	5	5
Elbow flexors	Lt. 5	5	5	5	5	5	5	5
	Rt. 5	5	5	4	5	5	5	5
Elbow extensors	Lt. 5	5	5	5	5	5	5	5
	Rt. 3	5	5	3	5	5	5	5
Pronators	Lt. 5	5	5	5	5	5	5	5
	Rt. 5	5	5	3	5	5	5	5
Supinators	Lt. 5	5	5	5	5	5	5	5
	Rt. 4	5	5	3	5	5	5	5
Wrist flexors	Lt. 5	5	5	5	5	5	5	5
	Rt. 5	5	5	3	5	5	5	5
Wrist extensors	Lt. 5	5	5	5	5	5	5	5
	Rt. 3	5	5	3	5	5	5	5
Grip strength	Lt. 5	5	5	5	5	5	5	5
	Rt. 4	5	5	4	5	5	5	5



Fig. 1(a) patient before correction



Fig. 1(b) same patient after correction

help at Our Lady of Apostle's Hospital in Jos, under an arrangement sponsored by a non-governmental organization abroad (Lillian Fund). The patients were brought in batches, had their demographic data ascertained, clinical examinations carried out, radiological examination was done when considered indicated and the muscle charting was carried out by the physiotherapy unit of the hospital. The totality of the clinical and radiological information was subjected to analysis by the authors and a "road map" to reconstructive surgery and rehabilitation agreed upon before the commencement of treatment. In-patient treatment continued until each patient was fit for discharge. The orthotic devices were designed in collaboration with the Relevant Technology unit in Jos while the physiotherapy unit was responsible for teaching the patients the use of the devices and ambulation under the supervision of the surgical team.

Fitness for discharge was jointly decided by both the surgical and physiotherapy units to the satisfaction of the council of authors.

Results

Eight patients were managed in the series in two batches. There were six males and two females (M: F: 3:1). The ages ranged from 8-16years (mean: 12 years). The age of onset of the disease varied from one to five years with a mean age of onset of 2.6 years. Three patients contracted the disease at two years while 3 patients were infected at three years of age. Of all the 8 patients, only 2 are primary school pupils. The rest had not attended school.

The patients were domiciled in the middle belt of Nigeria. The clinical presentation and clinical examinations of the patients showed varying

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deformities with some patients having multiple deformities. There was global lower limb muscle wasting in five patients; in 4 patients bilateral lower limbs were affected. Six patients had foot deformities with talipes equinovarus, equi-novalgus and fixed equinus deformities in two patients each. Three of them had bilateral deformities. Knee flexion con-tracture occurred in 2 patients with one of them having bilateral knee contracture. Two patients had flexion and abduction contractures of the hip, one of them had bilateral hip contracture.

Radiological finding of hip dislocation was noted in 2 cases, one of which showed bilateral featuresl. One of the hips dislocated centrally. Right mobile scoliosis and winging of the left scapula occurred in one patient that had trunk involvement while 2 other patients had limb length discrepancy and pelvic obliquity respectively.

Callosities over the knee were noticed in 2 patients, one whom had bilateral lesion Fiction dermatitis of the upper part of the knee was noticed in two patients. The muscle charting of the patients in the series is shown in table 1. Six of the patients were unable to walk. Of these, 2 ambulated via crawling on the ground (figs. 1a and 2a) while 2 ambulated by heaving their waists forward using trunk muscles. One other patient crawled on the buttocks (fig. 3a) and another patient heaved the lower limb forward while propped up on crutches.

Of the remaining 2 patients that could walk, one walked on tip toes, while the other ambulated by supporting hand on the knee.

The interventions are shown in table 2. Some patients had multiple interventions. Duration of hospital stay of the patients is shown in table 3.

Table 1(a): Muscle charting of upper limbs

Muscle Groups	Patients 1	2	3	4	5	6	7	8
Lower Limbs Hip flexors	Lt. 5	2	0	2	3	5	2	1
	Rt. 5	2	1	2	3	0	1	2
Hip extensors	Lt. 5	0	0	0	0	5	1	0
	Rt. 4	0	2	0	1	0	1	3
Hip adductors	Lt. 5	2	0	1	3	5	2	1
	Rt. 5	1	2	1	3	2	1	3
Hip abductors	Lt. 5	1	0	1	3	5	2	1
	Rt. 5	1	2	1	3	0	1	2
Knee flexors	Lt. 5	2	1	1	4	5	2	2
	Rt. 3	3	2	2	4	2	0	3
Knee extensors	Lt. 5	2	0	1	4	5	1	3
	Rt. 5	3	2	2	4	0	1	0
Ankle dorsi flexors	Lt. 5	0	0	0	3	5	1	1
	Rt. 3	4	1	0	3	2	1	3
Ankle planter flexors	Lt. 5	0	0	0	3	5	1	1
	Rt. 3	4	1	0	3	0	1	3
Abdominal muscles	Spared	Weak	Spared	Weak	Spared	Spared	Spared	Spared
Trunk muscles	Spared	Spared	Spared	Weak Rt.	Spared	Spared	Spared	Spared



Fig. 2(a) Patient before correction



Fig. 2(b) Patient after correction

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Table 2: ETV Success per age group

S/N	Procedure	Number of Procedure	Percentage
1	Elongation of tendo achilles	2	6.9
2	Medial soft tissue release	1	3.5
3	Girdle stone arthroplasty	1	3.5
4	Manipulation & POP application	1	3.5
5	Hip contracture release	7 -unilateral 3 - bilateral 4	24.1
6	Knee contractur release	3 -unilateral 2 - bilateral 1	10.3
7	Triple arthodesis	3 -unilateral 1 - bilateral 2	10.3
8	Ankle-Knee-Hip calipers	6 -unilateral 3 - bilateral 3	20.7
9	Mobilization		
	- Elbow crutches - Bilateral axillary crutches	1 4	17.2
	Total	**29**	**100**

Table 3: Duration of hospital stay

Duration of hospital stay (days)	Number of patients
61	1
67	3
68	3
81	1



Fig. 3(a) Patient before correction



Fig. 3(b) same patient after correction

The extent of disabilities and the outcome of management are depicted in figures 1to 3 while figure4 shows the x-ray of one of the patients.

Discussion

In this series of eight patients with a mean age of 12.6years, only two of the patients attended school. This is not surprising since they were all paralysed at pre-school age. It also underlies the subsequent helplessness and destitution these patients would face throughout life[1,2,4] Even though we encountered sporadic cases at the study centre, discussions with colleagues working in areas in northern Nigeria (where polio immunization was rejected few years ago) showed that there is an increase in new incidence of paralytic poliomyelitis. The fact remains that these new polio victims will continue to pose medical challenges.



Fig. 4: x-ray of one of the patients showing bilateral hip dislocation with the right been central.

We observed that polio cases with the degree of disabilities encountered in this study rarely present to the hospital. The intervention by non-governmental organizations in particularly seeking out and convincing the patients and the relations made it possible to get them treated. The anchor organisation encountered a case of severe polio paralysis that crawled on her belly by way of ambulation and was used by the parents for financial gains. The parents brings her to the streets on a wheel barrow daily and come later in the evenings to collect money and take her back home via the same means. When approached for rehabilitation aid, they bluntly refused. The culture of the people which permits begging for alms coupled with the severe economic downturn makes the victims opt for the use of their disability for financial gains rather than go through lifelong tedious efforts at

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rehabilitation[5].

The effort at eradicating poliomyelitis which has scored marked success in various parts of the world has effectively shifted attention of government, the people and the surgeon away from reconstructive surgery, probably because the best of results to be achieved by reconstructive surgery still leaves the patient disabled. All the patients in this series were able to ambulate in erect position after reconstructive surgery, by use of orthosis and physiotherapy and now have the hope of beginning to attend school. While pursuing eradication efforts, we should be mindful of the plight and needs of new cases. This is because the only hope patients with severe post polio paralysis have of making a decent living is to be rehabilitated to the point of being educated and being able to ambulate however cumbersome[4].

In conclusion, surgery offers hope in rehabilitating post polio paralysis and should be encouraged. With three of the six endemic countries existing in Africa, there is need for African surgeons to sustain interest in the surgical management of poliomyelitis. We call on surgeons to continue to maintain interest in the management of new cases until eradication is achieved.

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References

1. Chukwuma O. Nigeria remains polio endemic despite efforts at eradication. Pharmanews; 2005, 27(12):46 -47
2. Mbamali E.I. Anterior poliomyelitis. In Badoe E.A, Archampong E.Q and da Rocha-Afodu. (Editors). Principles and practice of surgery including pathology in the tropics Ghana publishing corporation. Tema 2000; (3): 1075-1077
3. Solomon L, Warwick D.J, Nayagam S. Apley's system of orthopaedics and fractures, 8th edition. Oxford University Press Inc. New york. 2001: 218-221

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