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Original Article

Post-injection nerve injuries in Kashmir: A menace overlooked

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Abstract

BACKGROUND: Nerve injury is a serious complication of intramuscular injections. About 12 billion injections are administered worldwide annually among which 50% are unsafe and 75% are unnecessary.

METHODS: Three hundred and ten patients with post-injection nerve injury attended the Department of Orthopedics, Government Medical College Srinagar (India) from Jan 2002 to Dec 2007. All patients were evaluated for the drug injected, site of injection, indication for injection and person who injected the drug. Severity of neurodeficit and socioeconomic and educational status of the patient was also noted.

RESULTS: A total of 278 patients had sciatic nerve injury, 29 had radial nerve injury and 3 had axillary nerve injury. One hundred and forty one were male and 169 were female patients. Injections were administered by unqualified persons in 258 patients (83%). Patients' age ranged from 1 to 98 years (mean 37 years) and they were followed for 24 to 60 months (mean follow up 36.6 months).

CONCLUSIONS: This alarming situation of unsafe injection practice needs an urgent check by preventing unauthorized personnel from injecting medicines, organizing compulsory update and refresher courses for all health service staff and educating the patients.

KEYWORDS: Kashmir, nerve, injury, post-injection.

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Nerve injury is a serious but preventable complication of intramuscular injections. It occurs more frequently than originally thought.[1-7] The World Health Organization (WHO) estimates that out of the 12 billion injections administered worldwide annually, 50% are unsafe and 75% are unnecessary.[1] Any nerve in the vicinity of the chosen injection site is likely to be damaged. Sciatic, radial and axillary nerves are injured by intramuscular injections. Neurological sequels can range from minor transient sensory disturbance to severe sensory disturbance and paralysis, with poor recovery.[8] Sciatic nerve, the most common nerve injured by intramuscular injections, especially in children manifests by paresis in the sciatic distribution followed by a causalgia or burning pain in the extremity, several hours or days later.[1,2] Diagnosis of sciatic palsy may be delayed up to an average of 3.8 months following the intragluteal injection.[3,4,7] The radial and axillary nerve injures though less common are affected with injections in the deltoid or upper arm and present as wrist drop and deltoid paralysis, respectively. In the past, children with foot drops were thought to have had "missed" cases of polio when in fact they had suffered injuries

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to their sciatic nerves with IM injections given during infancy.[3-7] The most common causes of injection nerve palsy are unnecessary injections, faulty techniques and administration of injections by the unqualified personal.[3,7,9] The purpose of this study was to bring forth the factors and circumstances responsible for the post-injection nerve injuries in Kashmir and to influence the policy makers of the state to curb the menace so that these serious injuries could be prevented.

Methods

From Jan 2002 to Jun 2007, 310 patients with post-injection nerve injury attended the Department of Orthopedics, Government Medical College Srinagar. A total of 141 (45.5%) were male and 169 (54.5%) were female patients. Age ranged from 1 to 98 years (mean 37 years). Two hundred and nine (67.5%) patients were less than 10 year old. Patients were followed from 24 to 60 months (mean follow up 36.6 months). All patients were thoroughly evaluated for the indication for injection, drug injected, site of injection, person who injected the drug and place where the drug was injected. Socioeconomic and educational status of patients and family were also noted. Patients were examined for any sensory or motor deficits. A total of 278 (89.7%) patients had sciatic nerve injury (207 had complete foot drop and the remaining had partial sensory and motor deficits only), 29 (9.3%) had radial nerve injury and 3 (1%) had axillary nerve injury. Passive stretching exercises and electrical stimulation were used to prevent contractures and denervation atrophy. Patients with foot and wrist drops were given ankle foot arthrosis and wrist drop splint, respectively. Further management was guided by nerve action potentials, electromyography studies and clinical motor and sensory examinations. Neurolysis was performed in 29 patients (23 sciatic and 6 radial nerves); 8 patients with wrist drop who did not show any improvements were treated by modified Robert Jones transfer.

Results

Patients of all ages were affected; mean age was 37 years (range 1-98 years) and 209 patients (67.5%) were less than 10 years of age. There were 141 male (45%) and 169 female (55%) patients (table 1). Injections were administered by unqualified persons in 258 patients (83%) and by qualified nurses in 52 patients (17%). Injections were not administered at the recommended sites in any of the affected patients. A total of 291 patients (94%) belonged to the rural areas and 96 (31%) to the below the poverty line. Foot drop was a presentation in 207 patients (67%) among whom 102 (49%) improved completely within 2 years, 47 (23%) improved partially and 58 (28%) did not improve at all; 21 patients with wrist drop had complete recovery ranging from 3 to 24 months. The remaining 8 ones did not show any improvement at all and were treated by tendon transfer. Only one patient of axillary nerve injury improved completely (table 2).

Table 1. Age and sex distribution.

Sex	Number of Patients (%)	1-10 Years (%)	11–98 Years (%)
Male	141 (45.5)	96 (31)	45 (14.5)
Female	169 (55.5)	113 (36.5)	56 (18)
Total	310 (100)	209 (67.5)	101 (32.5)

Table 2. Distribution and outcome of nerve lesions.

Nerve Lesion	Number of Patients	Complete Recovery	Partial Recovery	No Recovery	Neurolysis	Tendon Transfer
Sciatic (Foot Drop)						
Complete	207 (74.4%)	102 (49%)	47 (23%)	58 (28%)	22 (8%)	-
Partial	71 (25.6%)	60 (84.5%)	10 (14.1%)	1 (1.4%)	1 (0.35%)	
Radial	29 (100%)	21 (72.4%)	-	8 (27.5%)	6 (20.7%)	8 (27.5%)
Axillary	3 (100%)	1 (33.3%)	-	2 (66.7%)	-	-

Discussion

Nerve palsy is a serious but preventable complication of intramuscular injections,[1,3,4] especially in developing countries.[4,5] Post-injection nerve injury can occur in both adults and children, and neurological sequels can range from minor transient sensory disturbance to severe sensory disturbance and paralysis.[6,8,10,11] Intramuscular administration of drugs is presently a common practice in developing countries especially among the pediatric age groups. Some health workers are known to have strong preferences for injections and infusions even when oral and other alternative routes are equally good and even safer.[3] Such health workers indulge in these practices to convince the relations of the patients of the quality of their care. On the other hand, parents of ill children often consult health workers, demanding that they be given injections, which they believe, would work better and faster than drugs given orally. This belief is erroneous and can be related to the ignorance on the part of the patients.[3] Most patients affected in this study belonged to rural areas, who probably had little or no formal education. Urban people in general have a better formal education and are less likely to patronize substandard health facilities or quackery.[2,3] In this study, most injuries were inflicted by unauthorized personal and injections were prescribed by private practitioners in 83% patients; 17% of injections were said to be administered by nurses including auxiliaries and other health workers erroneously labeled as nurses. Factors predisposing to injection induced sciatic nerve injury, like the difficulty of restraining a fretful child and poor techniques such as angulating the needle while injecting, can lead to direct trauma to the nerve or bring the nerve in close contact with the extravasating drug, which may cause damage.[2,3] The predominance of the pediatric age group in those affected can be explained by the fact that this age group is often affected with respiratory tract infections, the commonest condition for which the injections were administered. It is understandable, that the buttocks have come to be regarded by many health workers as the choice sites for intramuscular injections, because there is almost no other conceivable anatomical site with equally significant muscle bulk to deposit drugs.[3] Enough care is however, not being taken to avoid injuring the sciatic nerve by sticking to the upper outer quadrant.[6] Diagnosis of post-injection nerve injury is usually straightforward. Most patients presented with inability to walk or crawl well or paralysis of the limb, after intramuscular injections to the affected limb. Most of them present late; this may have compromised full recovery since fibrosis, which is preventable, might have set in.[7-9] Poliomyelitis is however, an important differential diagnosis in ill children who develop flaccid paralysis after injections, especially if they are not immunized against poliomyelitis. Such paralysis may in fact be cases of provocation polio.[12,13] To reduce the high frequency of this handicapping condition, injections should be prescribed only when mandatory and should be administered by well-qualified and competent personnel.[3,6] There is a need to give appropriate education to health service providers, parents and other child care givers on the dangers of parental administration of drugs, with a view to discourage the existing dangerous preference of health workers and parents for injections. It is worrying that persons who do not have requisite knowledge of safe injection practice administered the injections in most cases. As alluded to above, it is possible that some of the personnel described, as nurses were auxiliaries and other health attendants. Whatever the case, the situation points to the need to organize compulsory update and refresher courses for all health service staff. At the same time, all forms of quackery should be identified and sanctioned.

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