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ABSTRACT

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Common peroneal nerve palsy caused by an initially misdiagnosed extraneural and intraneural benign ganglion cyst of the peroneal nerve in a 11-year-old child: A rare but severe condition

Ingo Schmidt

To the editor,

An 11-year-old obese boy presented with a right common peroneal nerve (CPN) palsy. At first presentation in our hospital, the patient reported progressive palsy starting only with painless weakness for dorsiflexion of his right foot two years ago. There was no history of any trauma. Within these two years, the patient was explored by his family doctor, a pediatrics, and a neurologist. The diagnostic management included magnetic resonance imaging (MRI) of the cerebrum and overall spine, electromyography, electroencephalography, analyses of blood and cerebrospinal fluid samples. No causes could be found by the treating physicians that declared his CPN palsy. So the diagnosis of a peroneal nerve mononeuropathy with unclear genesis was made, and the patient was treated by oral medication of glucocorticoids and vitamin B₁₂. On first clinical examination in our hospital, a painless foot drop was present, and the sensibility at the peripheral peroneal nerve area was completely lost. The strength of dorsiflexion of foot was completely lost according grade 0 in Medical Research Council scale (0–5), and electromyography revealed a severe axonal lesion in the absence of motor activities. Magnetic resonance imaging (MRI) scans of his right knee revealed a subcutaneous, well demarcated and lobulated cyst adjacent to the proximal tibiofibular joint which was clinically not palpable through the thick layer of subcutaneous fat of the obese patient (Figure 1A–B). According to these findings, the

diagnosis of a proximal tibiofibular joint cyst was made by the radiologist. Based on the presented peripheral neurological symptoms, surgical revision was detected by us. The lesion was surgically exposed through a large longitudinal incision starting distally over the lateral aspect of fibula, passing the popliteal fossa with a vertical incision, and extending up longitudinally on the dorsal aspect of the thigh. Intraoperatively, a cyst originating from the proximal tibiofibular joint could not be found, but there was an extraneural and intraneural ganglion cyst with size of 7x2.5 cm involving the CPN, and both its superficial sensory nerve (SSN) and deep motor nerve (DMN) distally (Figure 1C). After careful dissection and removal of the tumor in a monobloc manner, a division of the CPN distally was seen, but macroscopically there were no structural damages (i.e., neurotmesis) both of the CPN and its DMN/SSN (Figure 1D). Histological examination confirmed the diagnosis of a benign ganglion cyst. The wound healing was uneventful. One year after surgery, a functional recovery could not be observed, so a tendon transfer procedure to restore dorsiflexion of his foot was recommended by us, but declined by the parents of the patient at this time.

The CPN originates from the sciatic nerve, passes posteriorly and laterally to the biceps femoris muscle in the popliteal fossa, crosses the head of the fibula, and descends to lower leg after dividing in its SSN and DMN. Most often, CPN palsy occurs at the fibular neck, where the nerve is superficial and vulnerable to direct injury, overstretching, and entrapment. The entrapment of CPN potentially leading to palsy (i.e., foot drop) caused by extraneural tumors around the proximal tibiofibular joint is known from literature [1].

Nerve entrapment caused by ganglion cysts is still widely known from the upper extremity. Ganglion cysts around the proximal tibiofibular joint leading to CPN palsy, first described in 1921 by Sultan [2], is much less common, it has a peak incidence in the fourth decade of life, and it may occur both extraneural and intraneural [3–5]. Our patient's case suggested that ganglion cysts of the peroneal nerve in MRI can mimicking proximal tibiofibular joint cysts. Its prevalence with 0.76% is

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also very rare that was found in a cross-sectional study including 654 knee MRI scans in patients with the most common clinical diagnosis of meniscal tears (42.8%), the mean age of these patients was 43.4 years (range 42–54 years), and the cysts ranged in size from 1.0–2.8 cm [6]. In literature, some case reports have been described CPN palsy caused by a ganglion cysts of the peroneal nerve or a cyst originating from the proximal tibiofibular joint in children [7–12].

With our patient, it must be noted critically that the ganglion cyst was initially misdiagnosed over a period of two years, and so a functional recovery could not be achieved, despite surgical removal of the cyst and neurolysis of the CPN. It must be suggested that the prolonged time in diagnostic management (initially demyelinating entrapment with weakness only) led to a severe and irreparable axonotmesis of the peroneal nerve. When a CPN palsy is present, surgical nerve decompression with neurolysis should be done as early as possible. The prognosis of functional recovery in patients with CPN palsy depends on the severity of neurological deficit and time of surgical neurolysis. In general, the prognosis for a demyelinating lesion is much more favorable than for an axonal loss lesion [13]. The outcome is usually favorable if surgery is done within four months after first presentation of neurological deficits, and less favorable in patients who have neurological symptoms for longer than one year [1, 14]. For irreparable CPN palsy, a tendon transfer procedure utilizing the tibialis posterior, first described in 1933 by Ober [15], with or without a combined transfer of the flexor digitorum longus is the method of choice for functional recovery of patients (Figure 2A–C) [16, 17].

Figure 1: (Case presentation): (A) Coronal T1-weighted MRI scan demonstrating the well demarcated oval cyst adjacent to the proximal tibiofibular joint, (B) Axial T2-weighted MRI scan demonstrating the subcutaneous lobulated cyst with a signal similar to water lateral to the proximal fibula (arrow), also noted that the cyst is surrounded by a thick layer of subcutaneous fat that did not allow sensing the tumor by palpation, (C) Intraoperative clinical photograph showing the carefully dissected CPN (gray arrow) which is surrounded distally by the oval ganglion cyst with size of 7x2 cm, and (D) Intraoperative clinical photograph after removal of the cyst in a monobloc manner showing that the CPN (gray arrow) was divided distally, and macroscopically there were no structural damages both of the DMN and SSN (white arrows).

Figure 2: (Example for tibialis posterior transfer): (A) Clinical photograph of a 53-year-old male who sustained an open iatrogenic neurotmesis of the right CPN in another hospital, secondary treated with autologous sural nerve grafting in our hospital (arrow), (B) Clinical photograph of the patient one year after autologues sural nerve grafting, there was unchanged a complete foot drop without any signs of functional recovery (arrow), a tibialis posterior tendon transfer procedure had to be performed by us in the further course, (C) Clinical photograph of same patient one year after the tendon transfer showing significant improvement of dorsiflexion of his right foot.

Keywords: Ganglion cyst peroneal nerve, Common peroneal nerve palsy

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Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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REFERENCES

1. Schmidt I. Entrapment of the common peroneal nerve due to multiple hereditary exostoses with synostosis of the proximal tibiofibular joint. J Musculoskelet Disord Treat 2017;3(2):33.
2. Sultan C. Ganglion der nervenscheide des nervus peroneus. Zentralbl Chir 1921;48:963–5.

3. Greer-Bayramoglu RJ, Nimigan AS, Gan BS. Compression neuropathy of the peroneal nerve secondary to a ganglion cyst. Can J Plast Surg 2008 Fall;16(3):181–3.
4. Kukreja MM, Telang VD. Common peroneal nerve palsy secondary to a proximal tibiofibular joint “Ganglion cyst”: A case report and review of literature. Open J Orthop 2015;5(11):369–77.
5. Ozden R, Uruc V, Kalaci A, Dogramaci Y. Compression of common peroneal nerve caused by an extraneural ganglion cyst mimicking intermittent claudication. J Brachial Plex Peripher Nerve Inj 2013 May 30;8(1):5.
6. Ilahi OA, Younas SA, Labbe MR, Edson SB. Prevalence of ganglion cysts originating from the proximal tibiofibular joint: A magnetic resonance imaging study. Arthroscopy 2003 Feb;19(2):150–3.
7. Frank DA, Sangimino MJ. Peroneal nerve palsy secondary to ganglion cyst of the proximal tibiofibular joint in a pediatric patient. Orthopedics 2008 Jan;31(1):86.
8. Waldschmidt U, Slongo T. An unusual cause of paralysis of the peroneal nerve: A case report. J Pediatr Surg 2010 Jan;45(1):259–61.
9. De Schrijver F, Simon JP, De Smet L, Fabry G. Ganglia of the superior tibiofibular joint: Report of three cases and review of the literature. Acta Orthop Belg 1998 Jun;64(2):233–41.
10. Johnston JA, Lyne DE. Intraneural ganglion cyst of the peroneal nerve in a four-year-old girl: A case report. J Pediatr Orthop 2007 Dec;27(8):944–6.
11. Robla-Costales J, Socolovsky M, Dubrovsky A, et al. Intraneural cysts of the peroneal nerve in childhood: Report of 2 cases and literature review. [Article in Spanish]. Neurocirugia (Astur) 2011 Aug;22(4):324–31.
12. Luigetti M, Sabatelli M, Montano N, Cianfoni A, Fernandez E, Lo Monaco M. Teaching neuroimages: Peroneal intraneural ganglion cyst: A rare cause of drop foot in a child. Neurology 2012 Feb 14;78(7):e46–7.
13. Masakado Y, Kawakami M, Suzuki K, Abe L, Ota T, Kimura A. Clinical neurophysiology in the diagnosis of peroneal nerve palsy. Keio J Med 2008 Jun;57(2):84–9.
14. Maalla R, Youssef M, Ben Lassoued N, Sebai MA, Essadam H. Peroneal nerve entrapment at the fibular head: Outcomes of neurolysis. Orthop Traumatol Surg Res 2013 Oct;99(6):719–22.
15. Ober FR. Tendon transplantation in the lower extremity. N Engl J Med 1933;209(2):52–9.
16. Ozkan T, Tuncer S, Ozturk K, Aydin A, Ozkan S. Tibialis posterior tendon transfer for persistent drop foot after peroneal nerve repair. J Reconstr Microsurg 2009 Mar;25(3):157–64.
17. Grauwyn MY, Wavreille G, Fontaine C. Double tendon transfer for correction of drop-foot. Orthop Traumatol Surg Res 2015 Feb;101(1):115–8.

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