



Case Presentation

Peripheral Neuropathy After Fecal Microbiota Transplantation for *Clostridium difficile* Infection: A Case Report

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Abstract

We present a case of a 71-year-old man with *Clostridium difficile* infection who underwent fecal transplantation. The patient was found to have a predominantly demyelinating sensorimotor peripheral polyneuropathy upon electrodiagnostic testing. To our knowledge, only one case of peripheral neuropathy after fecal transplantation has previously been reported. Although the exact cause of this patient's neuropathy cannot be confirmed, it has been speculated that the pathophysiology is an immune-mediated process. Given the increasing incidence of *C difficile* infections and the emergence of fecal transplantation as treatment, it is important to note that peripheral neuropathy is a potential adverse complication.

Introduction

Clostridium difficile infection remains a growing concern in the health care setting and is responsible for 20%-30% of cases of antibiotic-associated diarrhea [1]. The risk of recurrence can reach 15%-30%, and risk increases with each subsequent relapse [1,2]. Uncontrolled infection can result in intestinal perforation and sepsis [3]. Fecal microbiota transplantation has emerged as a newer treatment with high rates of efficacy and low relapse rates [4]. In this report, we present a case of demyelinating peripheral neuropathy after fecal microbiota transplantation. To our knowledge, only one other case in the literature mentions the occurrence of peripheral neuropathy after this procedure [4,5], and our report is the first to include diagnosis with an electrodiagnostic study.

Case Description

A 71-year-old man with a medical history of chronic kidney disease and coronary artery disease underwent coronary artery bypass graft surgery. Prior to surgery, the patient reported dyspnea, angina, subjective weakness, and cramping of the left side of the body upon exertion. He did not have diabetes, thyroid disease, or other toxin exposures such as alcohol. He was

independent in ambulation and activities of daily living prior to hospitalization. His postoperative course was complicated by fever and he was treated with multiple antibiotics, but this fever ultimately was thought to be a beta-lactam drug fever.

Several days after undergoing surgery, the patient experienced a *C difficile* infection complicated by toxic megacolon refractory to treatments, including metronidazole, vancomycin, and intravenous immunoglobulin. His infection was finally treated with fidaxomicin and fecal microbiota transplantation (FMT). FMT was performed 11 days after his bypass surgery. His mobility was limited during his *C difficile* infection because of profuse diarrhea. When the patient attempted to walk after the resolution of the diarrhea, a few days after FMT (2 weeks postoperatively), he noted marked difficulty in mobility and balance and required maximum assistance for ambulation. His hospital course was complicated further with subsequent renal failure that required transient dialysis, upper gastrointestinal bleeding from a duodenal ulcer, and urosepsis with bacteremia.

After 6 weeks of acute hospitalization, the patient was admitted to our acute inpatient rehabilitation facility because of debility and difficulty walking. Upon physical examination, the following degrees of strength were noted: 4/5 in the upper extremities, 5/5 in the hip

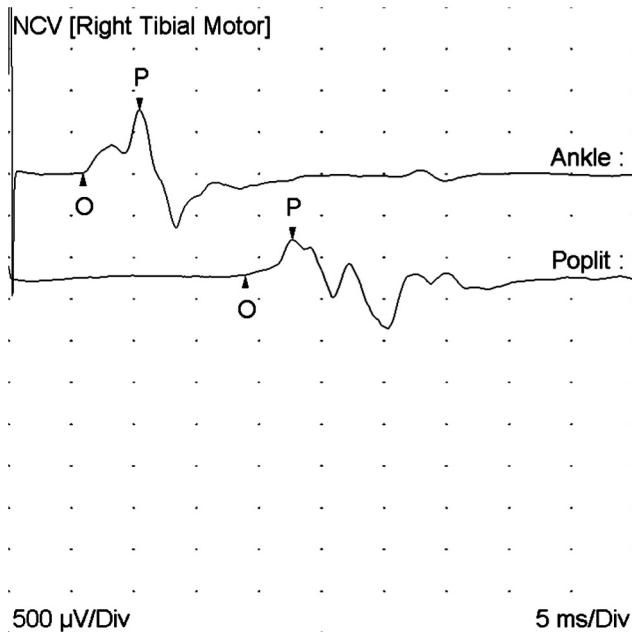


Figure 1. Right tibial motor nerve conduction study showing temporal dispersion of compound muscle action potential at popliteal stimulation. NCV = nerve conduction velocity; O = onset latency; P = peak; Div = division on each axis.

flexors and knee extensors bilaterally, 4/5 and 3/5 in the right and left ankle dorsiflexors, respectively, 4/5 in the ankle plantar flexors, and 3/5 in toe extensors bilaterally. The patient also had markedly decreased

sensation to vibration in both feet, although sensations of temperature and pain were intact. A sensory examination of both hands showed a similar pattern, although the hands were affected to a lesser degree than the feet. Reflexes were 1+ in the biceps, 2+ in the quadriceps, and absent in the triceps brachii and triceps surae muscles. The patient had prominent balance impairment and required a rolling walker for ambulation with moderate assistance.

An electrodiagnostic study was performed to identify possible peripheral nervous system disorders underlying his mobility impairment at 2 weeks of his rehabilitation stay (8 weeks postoperatively, 6.5 weeks after his FMT procedure, and approximately 6 weeks from the onset of subjective weakness). The motor nerve conduction study demonstrated marked temporal dispersion with slowed conduction velocity of bilateral tibial nerves (Figure 1) and conduction block of bilateral peroneal nerves at the fibular head (Table 1). The sensory nerve action potentials (SNAPs) of the left superficial peroneal and sural could not be obtained, and the peak latencies of the left median, radial, and ulnar SNAPs were prolonged (Table 2). The F wave latencies of the left tibial, median, and ulnar nerves were prolonged (64.8 ms, 34.8 ms, and 35.3 ms, respectively), and the F wave of the left peroneal nerve could not be obtained. Minimal membrane instability was noted in the limb muscles with the needle electromyography procedure (Table 3).

Table 1
Motor nerve conduction studies

Nerve	Onset Latency (ms)	Amplitude (mV)	Stimulation Site 1	Stimulation Site 2	Distance (cm)	Velocity (m/s)
Left peroneal motor*						
Ankle	6.1	3.2	B Fib	Ankle	30.0	28.3
B Fib	16.7	2.5	Poplt	B Fib	12.0	20.0
Poplt	22.7	0.5				
Right peroneal motor*						
Ankle	5.6	2.7	B Fib	Ankle	32.0	37.6
B Fib	14.1	2.2	Poplt	B Fib	10.5	29.2
Poplt	17.7	0.9				
Left tibial motor†						
Ankle	5.5	1.8	Poplt	Ankle	44.0	31.0
Poplt	19.7	1.1				
Right tibial motor†						
Ankle	5.9	0.8	Poplt	Ankle	39.5	30.4
Poplt	18.9	0.4				
Left ulnar motor‡						
Wrist	4.1	8.1	Elbow	Wrist	24.5	57.0
Elbow	8.4	8.0				
Left median motor[§]						
Wrist	4.7	6.7	Elbow	Wrist	29.0	51.8
Elbow	10.3	6.8				

Abnormal values are in bold type.

Temperature was maintained at $\geq 32^{\circ}\text{C}$ for the upper limb and $\geq 30^{\circ}\text{C}$ for the lower limb.

B fib = below fibular head; Poplt = popliteal fossa.

* Recording from the extensor digitorum brevis.

† Recording from the abductor hallucis.

‡ Recording from the abductor digiti minimi.

§ Recording from the abductor pollicis brevis.

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