

# REVERSIBILITY OF EARLY ACUTE DIABETIC NEUROPATHY (DN) IN ADOLESCENTS WITH TYPE 1 DIABETES MELLITUS (T1DM)

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## Introduction

- ❖ Diabetic neuropathy (DN) is a common complication of type 1 diabetes mellitus (T1DM) with significant morbidity in adulthood. The association between DN and metabolic control is well established both in adults and children with T1DM. The latter present usually with subclinical nerve dysfunction.
- ❖ However, acute painful DN may present early in the course of the disease, especially in adolescents with poor metabolic control. Early nerve damage may be reversible.

## Case presentation

- A female adolescent, aged 12yrs, with a T1DM duration of 9 months, presented with an acute metabolic derangement (HbA1c:11%) due to eating disorders. She reported omission of meals and insulin doses in an attempt to reduce her weight. The girl complained of numbness and burning sensation in the limbs. Nerve conduction studies (NCS) were indicative of demyelinating deficits in sural and peroneal nerves, which improved within 2 years, with a progressive decline in HbA1c values (7.6%) and the resolution of the eating disorder by psychiatric support (Table 1).
- An adolescent boy (age: 16 years, T1DM duration: 2,5 years), presented with painful DN in the lower limbs, during a period of dramatic deterioration of his metabolic control. During a 4 month period HbA1c values increased from a previous mean of 6.2% to 9.5%. NCS depicted demyelination in sural and peroneal nerves. His symptoms resolved and the electrophysiological parameters normalized with intensive follow up and improvement in his HbA1c value within 6 months (HbA1c:7.2%) (Table 2).

Nerves	1 <sup>st</sup> NCS	2 <sup>nd</sup> NCS	Normal values
<b>Peroneal</b>			
Amplitude (µV)	6	8.5	≥6
Velocity (m/sec)	35	48	≥40
<b>Sural</b>			
Amplitude (µV)	10	17	≥6
Velocity (m/sec)	38	50	≥40

**Table 1:** NCS values during symptomatic period (1<sup>st</sup> NCS) and follow up 2 years later (2<sup>nd</sup> NCS).

Nerves	1 <sup>st</sup> NCS	2 <sup>nd</sup> NCS	Normal values
<b>Peroneal</b>			
Amplitude (µV)	8	8.5	≥6
Velocity (m/sec)	34	48	≥40
<b>Sural</b>			
Amplitude (µV)	10	12	≥6
Velocity (m/sec)	38	49	≥40

**Table 2:** NCS values during symptomatic period (1<sup>st</sup> NCS) and follow up 6 months later (2<sup>nd</sup> NCS).

## Conclusion:

- Acute DN may present in adolescent patients with T1DM, early in the course of the disease and may be also associated with eating disorders.
- Eating disorders, which are common in adolescence, must be diagnosed and treated promptly.
- Symptoms and electrophysiological findings of acute DN can be reversed with the achievement of optimal metabolic control. However long-standing hyperglycemia can cause permanent nerve impairment.
- Intensive follow up is needed to assure that adolescents with T1DM maintain a near normoglycemic profile, so as the evolution of DN to be prevented or even reversed.

