Function of the neuromuscular junction in patients with spinal muscular atrophy (SMA); A cohort study on the function of the neuromuscular junction in Dutch patients with spinal muscular atrophy to elucidate the possible role of the neuromuscular junction in the pathophysiology of spinal muscular atrophy

Published: 24-06-2011
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The main objective of this prospective cohort study of patients with proximal SMA in the Netherlands is to investigate the function of the neuromuscular junction by means of repetitive nerve stimulation (RNS).

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Neurological disorders congenital
Study type	Observational non invasive

Summary

ID

NL-OMON36526

Source
ToetsingOnline

Brief title
Neuromuscular junction in spinal muscular atrophy

Condition

- Neurological disorders congenital
- Neuromuscular disorders

Synonym
SMA, spinal muscular atrophy

Research involving
Human

Sponsors and support

Primary sponsor: Universitair Medisch Centrum Utrecht
Source(s) of monetary or material Support: Prinses Beatrix Fonds

Intervention

Keyword: Nerve conduction study, Neuromuscular junction, SMA, Spinal muscular atrophy

Outcome measures

Primary outcome

The main study parameters are the neurophysiologic characteristics in

neuromuscular transmission measured by means of nerve conduction studies (i.e.

decrement, increment, distal latencies, compound muscle action potential (CMAP)

amplitude, nerve conduction velocity).

Secondary outcome

not applicable

Study description

Background summary

Spinal muscular atrophies (SMA) are a group of disorders characterized by weakness caused by loss of motor neurons in the anterior horn cells of the spinal cord, and are classified according to patterns of weakness and specific genetic mutations. Proximal SMA is characterized by weakness of proximal muscle

groups and is caused by homozygous deletion of the survival motor neuron 1 (SMN1)-gene. SMA is generally considered to be a neurogenic disease. However, the pattern of weakness (i.e. proximal weakness) in SMA is uncommon for a neurogenic disorder and is more compatible with myopathy or disorders of the neuromuscular junction. Animal models for SMA, i.e. SMN1-knock out mice, have indeed shown specific defects in the anatomy and development of the neuromuscular junction. Treatment of SMA is supportive. Improved insight in the pathogenesis of SMA may help the development of new forms of treatment.

Study objective

The main objective of this prospective cohort study of patients with proximal SMA in the Netherlands is to investigate the function of the neuromuscular junction by means of repetitive nerve stimulation (RNS).

Study design

Pilot study in a cohort of SMA patients.

Study burden and risks

This research will be done in patients with SMA. The burden of participation consists of undergoing nerve conduction study in 4 different muscles (musculus abductor digiti minimi, musculus trapezius, musculus orbicularis oculi and musculus abductor hallucis). Overall, the burden and risk associated with participation in the study will be minor.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adolescents (12-15 years)
Adolescents (16-17 years)
Adults (18-64 years)
Children (2-11 years)
Elderly (65 years and older)

Inclusion criteria

1) a diagnosis of SMA type 2, 3a, 3b or 4, diagnosed on clinical grounds and confirmed by homozygous deletion of the SMN1 gene; 2) given oral and written informed consent

Exclusion criteria

1) known disorders of the NMJ or polyneuropathy; 2) use of drugs that may alter NMJ function; 3) SMA type 1 4) apprehension against participation in EMG

Study design

Design

Study type: Observational non invasive

Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Basic science

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	05-07-2011
Enrollment:	30
Type:	Actual

Ethics review

Approved WMO Date:	24-06-2011
Application type:	First submission
Review commission:	METC Universitair Medisch Centrum Utrecht (Utrecht)
Approved WMO Date:	24-10-2011
Application type:	Amendment
Review commission:	METC Universitair Medisch Centrum Utrecht (Utrecht)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL33820.041.10