Author's response to reviews

Title: Catheter-based distal sciatic nerve block in patients with Charcot-Marie-Tooth disease

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Author's response to reviews: see over
Dear Dr. T. Rowles,

Reference MS: 4971210551042298 - Distal sciatic nerve block in patients with Charcot-Marie-Tooth disease

We are submitting the revision of our manuscript "Distal sciatic nerve block in patients with Charcot-Marie-Tooth disease" after we have made corrections in order to meet your and the reviewers wishes for more and better information.

First, we want to thank you and the reviewers for the fast and favorable handling of our manuscript! Second, we are indebted to the reviewers for their fair and constructive comments.

We have revised our manuscript according to the reviewers’ suggestions, and our changes indicated in the response to the Reviewers Letter. The title now is “Catheter-based distal sciatic nerve block in patients with Charcot-Marie-Tooth disease”

We have added the following Acknowledgment: ‘We acknowledge support by Deutsche Forschungsgemeinschaft and Friedrich-Alexander-Universität Erlangen-Nürnberg within the funding programme Open Access Publishing’

Enclosed we send to you the replies to each of the reviewers’ comment.
Again, thank you for your helpful comments.

Sincerely,

H. J. Schmitt
Authors answer to

Reviewer: Xavier Capdevilla

This is a prospective observational study. This is and was stated in the last sentence of the Background section. To clarify our study design we added “consecutive” in the first sentence of the Method section in the Abstract as well as in the first sentence of the Methods section.

The reviewer is right; all patients received multiple bolus of ropivacaine. To clarify this we have changed the title of the paper. The title now is “Catheter-based distal sciatic nerve block in patients with Charcot-Marie-Tooth disease”. In addition, we have added the adjunct “catheter-based” in the first sentence of the Method section of the Abstract as well as in the second sentence of the Methods section.

We agree with the reviewer’s opinion that ultrasound guidance facilitates placement of a catheter in these patients. Unfortunately at the time we performed the study ultrasound was not available at our institution. Now we have it and use it. We have added a short section to indicate this in the Discussion section beginning with “A limitation of this study...”.

Division into groups; the common clinical finding in all these patients was an increase in walking disability and patient’s wish for a surgical intervention to overcome these problems. The preoperative status varied between ASA I to III (table 1). It was not possible to assess patient’s pain sensation in advance. It is known that sensitivity to pain varies widely among CMT patients (Padua et al. Neurol Sci 2008; 29:193, Ribiere et al. Annals of Physical and Rehabilitation Medicine 2012; 55 : 160). Assignment to groups was based on electrophysiological data at the end of the study. For ethical reasons randomization was not possible (this is stated in the Methods section). As far as the authors know up to now there is no investigation published documenting a correlation between disease progression and pain sensitivity in CMT.
Most surgical procedures were osteotomies to correct the so-called “Charcot foot” (pes equinovarus). We have added a new column in table 1 and documented the surgical procedures.

To identify the sciatic nerve several approaches are described. We used the lateral popliteal approach. This approach is outside (lateral) the popliteal fossa between biceps femoris and the tendon of the vastus lateralis muscle. The inserting point was 8-10 cm cephalad of the femoral epicondyle (as stated in the Methods section). The aim of this technique is to place the catheter as near as possible to the sciatic nerve before dividing into the tibial and common peroneal nerve. (see also McLeod and al. Can J Anaesth 1995; 42:765)

It is correct that accepting a dorsal flexion may not be the best response. However, as stated in the text in some patients it was overall difficult to get any response. So we accepted both a dorsal or plantar flexion.

Indeed this is a pilot study approaching to the important problem of the appropriate use of regional anesthesia in patients with pre-existing neurological diseases. We preferred the administration of single bolus of LA through the catheter for several reasons:

First, we really did not know how pain sensitivity would be after the performed surgery in these patients. Therefore, we administered bolus of LA on demand.

Second, before a bolus of LA was given a short neurological assessment was done to exclude an apparent neurological deficit of the leg. We have stated this now in the Method section beginning with ‘Prior the bolus was given…’.

Third, we used bolus of LA without an additional medication for pain relief to check whether our block has any effect.

In addition, in case pain relief by the LA was not sufficient patients received paracetamol or piritramide. This is summarized in table 2.

The bolus was given by a doctor. This is now stated in the Methods section beginning with ‘Prior the bolus was..’.

The conclusion of the Abstract has been modified.
Minor Revisions

Typos of ropivacaine (mg/mL) was changed throughout the manuscript.

The manuscript has been reviewed by a native speaking colleague.

We have omitted two sentences in the *Discussion (third subsection)* beginning with ‘The course of CMT...’ In addition, we have also deleted two another sentences in the *Discussion (forth subsection)* beginning with ‘The natural history.....’
Authors answer to

Reviewer Dan Benhamou

The reviewer is right regarding ultrasound-guided insertion of a perineural catheter. As the study started ultrasound was not available at our institution. Now we have it and use it. We have now addressed this important issue in the Discussion section beginning with ‘A limitation of this study...’. The notion that ‘nerve stimulation should be used’ was omitted.

According to the reviewers suggestion we have completely changed the Conclusion section (Abstract and Discussion). In particular, the statement that ‘peripheral nerve block should be avoided’ was omitted. We have changed the introduction of the Discussion section.

The reviewer is right; we have not documented the complete pain scores. The target for pain therapy was to achieve a pain score ≤ 3. If patients had a pain score > 3 LA via the catheter or additional analgesics were given for pain control as stated in the Method section. The analgesics requirements are shown in table 2. The total amount of analgesics given correlates well with the efficacy of the nerve block.

Increasing duration of impulses; this is an interesting and difficult question. The typical finding in CMT is an overall decreased electrical excitability caused by nerve demyelination. Demyelination and loss of motor axons decrease in addition conduction velocity. Electrophysiological studies show that in an impaired nerve a higher current duration may be necessary to generate a motor response. We have not investigated this problem but based on these rare reports we used a priori a higher current duration (see also Meulstee et al. J Neurol Neruosurg Psychiat 1997;62:398 as well as Szerb et al. Reg Anesth Pain 2005;9:963). It is also known that unmyelinated fibers need higher stimulus duration.

Minor Essential Revisions

1. We use now US style throughout the manuscript
2. % was replaced by mg/mL throughout the manuscript
3. ‘drug’ was omitted
4. Background; we have added a sentence beginning with ‘Demyelination of peripheral...’ line 5

5. Methods:

a. It is correct that accepting a dorsal flexion may not be the best response. However, as stated in the text in some patients it was overall difficult to get any response. So we accepted both a dorsal or plantar flexion.

b. The specification of ropivacaine was changed

6. mAmp was replaced; the spelling of piritramide corrected.