Author's response to reviews

Title: Effects of epidural lidocaine analgesia on labor and delivery: a randomized, prospective, controlled trial

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Author's response to reviews: see over
1- Method of patient assignment was block randomization. Patients were divided into two groups based on odd and even numbers.

2- I tried to organize the discussion.

3- In cases of Dural Puncture, epidural block was performed in another space. Exclusion criteria of dural puncture is when another attempt for epidural was not performed. I deleted this exclusion criteria.

4- The group assignment was concealed in envelopes. The research assistant was not aware before approaching for her consent.

5- I must explain in response to Dr. Leopold Eberhart and also other reviewers that this work is an intervention (epidural labor analgesia) against our labor ward routines. Of course the dose of meperidine is not enough. Many patients do not receive enough narcotics during the course of labor. For failure of epidural, it was tried in another space. Lidocaine was administered in a timely manner with additional doses when it was necessary.

6- ASA status was corrected in the text.

7- Modified Bromage score was reported. No case of maternal hypoxemia or hypotension was detected.

8- I performed the language corrections that Dr. Manuel Vallejo recommended.

9- Crossover was not possible in this study because there is only one bed equipped for epidural labor analgesia. After randomization of one patient to epidural labor analgesia, selection of new patient (opening of the envelope) stopped until delivery of the newborn of a mother with epidural labor analgesia. Although it is not good that every patient is not able to receive epidurals when she want because the bed special for epidural is busy, it is the power of this work that makes crossover Impossible.

10- As you see in method section that epidurals was started at 4 centimeters of cervical dilatation. Dr. Halpern is correct. All I have written in the text as first stage means, active phase of the first stage. I corrected all of them. The primary outcome was the duration of the second labor stage. I consulted with my statistician and I re wrote the statistical analysis, see number 12.

11- My obstetric colleagues are not agree with narcotics for epidurals. This is because of inadequate personal for care of mother after delivery. It is the reason that I do not use narcotics for epidurals. When I wanted to start this work, marcaine was not available. (Dr. Marc Van de Velde)

12- About the first question of Marc Van de Velde I consulted with my statistician and I made some changes of the statistical analysis part of methods.

13- In response to the last question of Dr. Marc Van de Velde, about motor weakness and its link to labor outcome there is a complete explanation in the discussion:

Lidocaine is abandoned from epidural labor analgesia because of its motor blocking properties. Epidural analgesia has been said to worsen obstetric outcome because of motor block, and it is thus intuitively clear that lidocaine is not the best drug to use in this situation. However, the evidence linking motor block and obstetric outcome is not
as strong as often thought. For example, Evron et al., in a recent prospective, randomized double blinded study showed that the lower intensity of the motor block is not associated with any benefit in terms of obstetric outcomes, duration of the second stage of labor, and obstetric intervention. The only high quality study of the effect of epidural analgesia using lidocaine on obstetric outcomes was by Chestnut et al., concluded that maintenance of continuous epidural infusion of lidocaine did not prolong the second stage of labor. Despite the belief that links motor blocking properties of epidural analgesia to increased instrumental delivery rate, I did not find such correlation. Also there are some studies, in which least concentrated doses of local anesthetic are used for epidural labor analgesia, and patients were able to walk, but instrumentation rate was increased.

The results of the current study suggest that spontaneous delivery is more the result of fine obstetric management and that epidural analgesia (even with a drug which has not the best theoretical properties) has only minor influence. I continue and sometimes augment analgesia in the second stage of labor and during delivery, therefore a pain free mother can cooperate more fully and can push more effectively. This may work as a ,harmless instrumentation, and may neutralize the motor blocking effect of lidocaine. Although this seems true in normal patients, dystotic labor may benefit from the absence of motor block. This however remains to be shown.