Reviewer's report

Title: A positioning pillow to improve lumbar puncture in paediatric haematology-oncology patients: A randomized controlled trial.

Version: 1 Date: 18 July 2008

Reviewer: Lise Nigrovic

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Summary

Mare-Berard et. al. performed a randomized control trial to assess the efficacy of a positioning pillows for success rate of lumbar puncture (LP) in a pediatric oncology population. This is an important clinical goal both to decrease the discomfort associated with LP and to avoid the risk of introducing leukemic cells into the cerebrospinal space.

These investigators found no difference in the primary outcome or secondary outcomes. This is for one of two reasons:

1. The LP pillow does not affect LP success rates
2. The study was underpowered to show the difference. Although investigators did perform preliminary sample size calculations, the baseline rate of unsuccessful LPs was higher than expected making the required sample size to demonstrate a clinically important difference larger than the actual sample size.

Major compulsory revisions

The investigators should not report non-significant differences between groups as showing groups are being different in any way (for example see page 11 of discussion).

I would caution the investigators against making clinical recommendation base on their post-hoc sub-group analysis because of the risk of chance explaining the associations seen. This finding should instead be hypothesis generating for further study although there is a clinical sensibility to this finding (younger children are less likely to be able to use the pillow effectively or pillow as not sized for younger patients).

Were most LPs performed in the sitting position? Were non pillow LPs required to be done in the sitting position. Please add LP position for first attempt to Table 1. At my institution, most LPs are done in the lateral recumbent position not the sitting position. If, in the observation group, clinicians were allowed to select patient position (sitting or lateral recumbent), position is a potential confounder of LP success rates. This needs to be specifically addressed by the investigators.

Minor compulsory revisions

The intervention could not be blinded for the patient or the person performing the
procedure. This should be explored further in the limitations, with reference to the subjective secondary outcomes.

Small points
1. How was the pillow sterilized between uses or were they single use? This represents a potential limitation to this technology, even if demonstrated to be effective.

2. Please further discuss why a single size pillow was used for children age 2 years to 16 years. This issue could potentially explain the lack of benefit in the youngest patients (< 6 years of age).

Note: the version of the manuscript that I received had many track changes which made it difficult for me to assess the quality of the manuscript's writing.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests