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Dexamethasone Increases the Frequency of Post-Dural Puncture Headache (PDPH): An Evidence Based Reality

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Dear Editor,

Post-dural puncture headache (PDPH) is a common complication of neuraxial anesthesia. There are several well-known risk factors for its development, including young age, female gender, being pregnant, bigger size of block needle, multiple dural punctures, and cutting needle tips. However, its frequency is not related to previous history of headache, body habits, or tea or coffee drinking habits (1). Postpartum patients who had a spinal anesthesia for their delivery have at least three risk factors for PDPH development, i.e. pregnancy, young age, and female gender; even though we protect them from others by avoiding multiple punctures and choosing small pencil tip needle. However, PDPH remains less studied in parturient patients (2). When affected, they have a big trouble to cope with surgical pain and positional headache, and play their maternity role.

We used to use dexamethasone conventionally to prevent and treat PDPH, while there was no evidence to support this method. We designed a double blind, placebo controlled, randomized clinical trial to evaluate this common theory-based practice (3). Results were surprising; Dexamethasone increased significantly the frequency and severity of PDPH in first 24 hours after cesarean section compared to placebo. This significant effect disappeared at 48 and 72 hours assessments.

We presented the finding in the XXVIII annual European society of regional anaesthesia congress, Salzburg, Austria, September 9 - 12, 2009 (4) and in NYSORA world anesthesia congress, Dubai, March 7 - 12, 2010, where it was considered as a potential area of research by other investigators. The results of our study were approved by several authors and reflected as evidence later in a Cochrane review (5) and a meta-analysis (6).

Nowadays, the most relevant hypothesis about the pathogenesis of PDPH is via cerebrospinal fluid (CSF) leakage from dural tear. The resultant loss of intracranial pressure causes traction on meningeal membranes and intracranial blood vessels, which in turn causes inflammation and pain. Furthermore, the inflammation in the puncture site has a preventive effect on the occurrence of PDPH (7). Accordingly, we can suggest that dexamethasone as a glucocorticoid can postpone dural whole closure and increase the frequency and/or severity of PDPH in its effective time. However, as is reported for other inflammatory pain syndromes (8), it is possible to have some suppressing effects on intracranial component of these pathogenesis sequences to diminish the pain, although it has not been approved, yet. But, overall clinical effect of dexamethasone on PDPH -at least in prophylactic use- is increasing pain frequency and severity.

Surprisingly, there are several publications describing a preventive effect for dexamethasone on PDPH. Unfortunately, none of them are well-designed or well-conducted. In a recent published paper, dexamethasone was used along with two effective analgesic medications to prevent PDPH, and could suppress the effect of these two medications; therefore, the authors could not find any significant difference between two groups of study. But in main conclusion, they reported a protective effect for dexamethasone in this regard (9). This study also reported an extraordinary high prevalence of PDPH due to large cutting needles.

In conclusion, I suggest considering the use of Glucocorticoids, e.g. Dexamethasone, as a risk factor for development of PDPH, as has been supported by evidence-based recommendations in Cochrane review and meta-analysis studies (6). Thus, its further use in this way seems to have some ethical concerns.

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