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### Scientific and technological research

# Incidence of neurological complications and post-dural puncture headache after regional anesthesia in obstetric practice: A retrospective study of 2399 patients<sup>☆</sup>



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#### ABSTRACT

**Introduction and objectives:** Regional anesthesia provides excellent anesthesia and analgesia in obstetric patients, but has potential for complications such as post-dural puncture headache and permanent or transient nerve damage. This study aimed to describe the incidence of post-dural puncture headache and nerve damage in the obstetric population of a university hospital that was submitted to neuraxial blockades, comparing with the world literature, and identify risk factors.

**Materials and methods:** A retrospective cohort was performed including data collected in the records of post-anesthetic consults conducted during the year 2010. The main analysis was performed on the complaints of peripheral neurological deficits and headaches reported by patients, type of anesthesia and performed surgical procedures. A multiple regression analysis was performed to investigate the association between the onset of lower limb paresthesias and the length of stay of these patients in the gynecological position and other variables.

**Results:** A total of 2399 pregnant patients who had undergone neuraxial blockade were evaluated. Neurologic complications that occurred in these patients were divided into lower limb paresthesias (0.3%), transient radicular irritation (0.1%), and post-dural puncture headache (3%). The patients who stayed more than 60 min in gynecological position showed an odds ratio of evolution with lower limb paresthesias of 1.75 and patients who stayed more than 120 min showed an odds ratio of 2.1, but without statistical significance.

**Conclusions:** Patients submitted to neuraxial blockades and placed in gynecological position were more likely to evolve with lower limb paresthesias related to duration of this position.

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## Incidencia de complicaciones neurológicas y cefalea pospunción dural luego de anestesia regional en la práctica obstétrica: un estudio retrospectivo de 2399 pacientes

### RESUMEN

#### Palabras clave:

Anestesia obstétrica  
Anestesia de conducción  
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Anestesia epidural  
Bloqueo nervioso

**Introducción y objetivos:** La anestesia regional brinda una excelente anestesia y analgesia en pacientes obstétricas, pero existe el potencial de complicaciones tales como la cefalea pospunción dural y lesión neurológica permanente o transitoria. El presente estudio pretende describir la incidencia de la cefalea pospunción dural y daño neurológico en la población obstétrica de un hospital universitario que fue tratada con bloqueo neuroaxial, en comparación con la literatura mundial, e identificar los factores de riesgo.

**Material y métodos:** Se hizo una cohorte retrospectiva incluyendo los datos recolectados apartir de los registros de consultas posanestesia durante el año 2010. El análisis central se hizo en función de las quejas de déficit neurológico periférico y cefaleas reportadas por los pacientes, el tipo de anestesia y el procedimiento quirúrgico realizado. Se aplicó un análisis de regresión múltiple para investigar la relación entre el inicio de parestesias de las extremidades inferiores y el tiempo en que permanecieron estas pacientes en posición ginecológica y otras variables.

**Resultados:** Se evaluaron en total 2399 pacientes embarazadas tratadas con bloqueo neuroaxial. Las complicaciones neurológicas que se presentaron en estas pacientes se dividieron en parestesias de las extremidades inferiores (0,3%), irritación radicular transitoria (0,1%) y cefalea pospunción dural (3%). Las pacientes que permanecieron más de 60 min en posición ginecológica mostraron un índice de probabilidades (odds ratio) de evolución con parestesia de las extremidades inferiores de 1,75, y las pacientes que estuvieron más de 120 min mostraron un índice de probabilidades de 2,1, pero sin significación estadística.

**Conclusiones:** Las pacientes que se sometieron a bloqueo neuroaxial y se colocaron en posición ginecológica tenían mayores probabilidades de evolucionar con parestesias de las extremidades inferiores por el tiempo que permanecieron en esta posición.

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### Introduction and objectives

The neuraxial blockades (spinal anesthesia, epidural and combined spinal-epidural (CSE) anesthesia) are associated with lower morbidity and mortality compared to general anesthesia.<sup>1-5</sup> These advantages are most relevant when the patients in question include obstetric patients. Changes in maternal physiology during pregnancy make neuraxial blockades a more safe technique than general anesthesia for these patients.<sup>6-10</sup> However, some complications including neurological injury after regional anesthesia can be distressing to patients and families.<sup>11,12</sup> The major neurological complications associated with neuraxial blockades, especially spinal anesthesia, epidural or CSE include: post-dural puncture headache (PDPH), nerve damage, and cardiovascular complications such as hypotension, bradycardia or cardiac arrest.<sup>13-40</sup> The incidence of neurological complications caused by neuraxial blockades in our environment is not known. This information is essential to the adequacy of anesthetic techniques to our patients, thus improving the quality of anesthesia performed, and preventing the possible complications.

This study aimed to describe the incidence of PDPH and other neurological complications in obstetric patients of a university hospital submitted to regional anesthesia and compare it with to the incidence of the world literature,<sup>1,6,13,15,17</sup>

as well as observing the relationship between neurological complications and identifiable risk factors in these patients.

### Materials and methods

After approval by the Research Ethics Committee of our hospital, which waived informed consent, a retrospective cohort was performed with the data records of post-anesthetic consults conducted during the year 2010. These data refer to any symptom reported by obstetric patients submitted to neuraxial blockades on first day after anesthesia and its subsequent evolution and treatment. These patients underwent cesarean-section, forcipes and vaginal deliveries. Patients submitted to local or general anesthesia were excluded from this analysis. The main analysis was performed on the complaints of peripheral neurological deficits and/or headaches reported by patients, type of anesthesia and performed surgical procedure to which they were subjected. Incidence of these complications was calculated and compared with the incidence described in the literature, as well as the treatments described in our service and its efficiency. The association of peripheral neurologic deficits with length of stay of these patients in the gynecological position or other variables was investigated through a multiple regression analysis.

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