Abstract. – Multiple sclerosis is common among women of childbearing age. Neuraxial blocks have been administered to them with reluctance because of the hypothetical risk that local anesthetics might be more histotoxic to neural tissue already compromised by multiple sclerosis.

In spite of the lack of uniform guidelines on disorders in pregnancy like multiple sclerosis, and of the published data that sometimes contrast each other, experience gained in recent years has indicated that regional anesthesia is safe even in these patients, but there aren’t many published cases.

We describe the case of a pregnant woman affected by multiple sclerosis in which we administered spinal anesthesia for a cesarean section, and we analyzed the aspects that literature defines as critical points in this group of patients.

The results were favorable with regard to the level, intensity and duration of anesthesia. No neurological exacerbations were recognized during the hospital stay, nor during the follow-up that lasted 12 months.

Key Words: Loco-regional anesthesia, Multiple sclerosis, Spinal anesthesia.

Introduction

Neurological and neuromuscular diseases persist as a critical area for anesthetists taking into account the growing concern about exacerbation or worsening of pre-existing neurological deficits after surgery and anesthesia.

Multiple sclerosis (MS) is a progressive autoimmune disease characterized by demyelinating areas in the brain and the spinal cord, and manifests itself in periods of exacerbations and remissions.

With regard to general anesthesia we have a rather wide experience, while there is not a unanimous consensus on loco-regional anesthesia and in particular for central blocks because of lack of large trials or a high number of published cases.

We describe the case of a pregnant woman affected by MS in which we performed subarachnoid anesthesia for a cesarean section. We analyzed the aspects that literature defines as critical points in patients affected by MS: the intensity, level and duration of analgesia; whether exacerbations or worsening of preoperative neurological disorders appeared in the immediate period after surgery and anesthesia. We prolonged the follow-up by one year and carried out neurologic examination every three months.

Case Report

A 29-year old patient at her first pregnancy in the 39th week was admitted to the Obstetric Ward for a cesarean section. She had been affected for seven years by MS localized in the brain and the cervical spinal cord, manifested at the beginning by diplopia, weakness and paresthesias at the left up arm, treated with interferon beta and corticosteroids. At the beginning of pregnancy, the woman had a 2,5 Expanded Disability Status Scale and interrupted any pharmacological treatment with an uneventful positive course of pregnancy.

At the preoperative assessment, we did not recognize other diseases or laboratory alteration apart from a physiological variation during pregnancy. The patient was 164 cm tall, weighted 72 kg and we attributed to her the risk II according...
to the ASA Classification. Considering our standard management for cesarean sections and the absence of major contraindication, we decided to perform spinal anesthesia.

Obtaining the informed consent, we warned the patient that there was a remote possibility of a relapse of the disease after the childbirth (not only because of the central block).

Despite that, the patient was strongly oriented towards regional anesthesia because of the possibility of hearing the newborn’s first cry.

She was monitored in the operating room with: heart rate, pulsoxymetry, ECG, non invasive blood pressure. Prehydration with 300 ml of colloids was performed.

The patient was placed in the sitting position, the block was performed in the space between the second and the third lumbar vertebrae with a 25 Whitacre needle through the median access with one puncture and was administered 0.5% hyperbaric bupivacaine (10 mg). During the 50-minute surgical procedure the patient had neither hypotension, nor bradicardia, or any other complication related to the technique.

Analgesia was adequate and the level reached T6 verified with the pin-prick test and with the patient’s satisfaction. The duration of anesthesia was comparable to the one in other pregnant women not affected by MS with spinal anesthesia at the same level and with the same amount of local anesthetic: 60 minutes after neuraxial block, when the patient was transferred to the recovery room, the Bromage Score was 4, after 120 minutes it was 3, while after 180 minutes it was 1. After three hours in the recovery room, the patient underwent a complete neurological examination that did not show new deficits or exacerbation of the previous neurological symptoms of the disease. She was then monitored daily 96 hours after the cesarean section after which she was discharged from the Hospital with no neurological complications occurred.

The follow-up for neurological deficits was prolonged by one year with clinical examination after 3, 6, 9, 12 months, all of which showed no signs of neurological complications.

### Discussion

MS is an acquired demyelinating neurological disease, characterized by remitting neurological symptoms often followed by stable deficits and by a growing disability over time. In Italy, MS affects more than 50,000 people, two-thirds of these patients are women and primarily of childbearing age. Therefore, MS should be considered common among pregnant women.

Literature reporting the use of regional blocks in women with MS is limited and in some cases conflicting. Preexisting neurological diseases still represent a concern, also because of litigation issues, therefore some anesthesiologists tend to prefer general anesthesia as verified in reviews like the one by Vercauteren and Heytens1 or the retrospective survey by Drake et al2 although there is not any strong evidence about serious complication related to regional anesthesia in these patients3,4. Historically, the use of regional anesthetic techniques within this patient population has been contraindicated for fear of worsening the neurologic outcome through the “double-crush” phenomenon (patients with preexisting neural compromise would be more susceptible to injury if exposed to a secondary insult like mechanical trauma, local anesthetic toxicity, neural ischemia)5.

Literature reports some cases against regional anesthesia and the most frequently mentioned is the one by Levesque et al6. However, in 2006 a disease revealed by spinal anesthesia was reported7, while Finucane and Terblenche in 2005 reported a prolonged duration of a paravertebral block supposing that in case of demyelination there could be an abnormal uptake of local anesthetic8. On the other hand, some Authors prefer epidural anesthesia also in cesarean sections. Nevertheless, after the delivery other conditions might confound in case of relapsing disease: the pregnancy, the surgical stress, elevated temperature, breast-feeding and only at the end anesthesia seems to be involved9.

In the last decade, many data suggested that loco-regional anesthesia is safe in these patients. Perlas and Chan claim that MS should not be considered a contraindication neither for epidural nor for spinal anesthesia, stressing the concept of a thorough discussion with the patient about the available possibilities10.

In the survey by Drake et al2 of the UK obstetric anesthesiologists practice, the Authors find out that the opinion is divided, however, the majority would use a subarachnoid block for a cesarean although there is still a percentage that would use epidural or general anesthesia. They stress as well the importance of fully informed consent also derived from an antenatal assessment.
As examples we also have case reports listed in PubMed\textsuperscript{11-13}. In the presented case, we performed subarachnoid anesthesia because of its undisputed advantages in cesarean sections: the technique is easier and faster, the block is extended and profound, the pain control and muscular relaxation is optimal during the intervention, the total dose of local anesthetic administered is minimal, the patient is awake and can see the newborn. One of the principal reasons why we chose this technique were lower volumes and concentrations we can administer in this way.

Our results were satisfactory in regard to the intensity and the level of the block, while the duration was comparable to other cases in healthy population treated in the same way, and neurologic deficits were found neither as transitory ones after the delivery nor during our one-year follow-up.

With regard to this rather frequent disease, a randomized trial and a large cohort of cases would be useful because the practice currently relies on the opinion of experts’ and personal experience.

The choice should be based upon a careful consideration of risks and benefits for each patient, taking into account a wide neurologic assessment also for subclinical deficits, and of the patient’s preference. In fact, many Authors suggest to actively engage the patient in the decision-making process during the antenatal anesthesiologic assessment.

A successful management would evidently be possible with the cooperation of the anesthetist, the gynecologist and the neurologist involved in the peripartum care of this high-risk group of parturients\textsuperscript{14}.

References


