CLINICAL INFORMATION

Anesthesia for cesarean section in pregnant woman with Guillain Barré syndrome: a case report

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Abstract
Background and objectives: Guillain Barré syndrome (GBS) is an autoimmune neurological disease characterized by an acute or subacute demyelinating polyradiculoneuritis. It is an unusual event during pregnancy and a challenge for the anesthesiologist, due to the possibility of impairment of neuromuscular function and occurrence of respiratory complications in the postoperative period. The objective of this paper is to discuss the anesthetic management of a pregnant patient affected by the disease.

Case report: Female patient, 30 years old, 38 weeks' pregnant, diagnosed with fetal death that occurred about a day, and with SGB. Cesarean section was performed under general anesthesia, progressing without complications perioperatively.

Conclusions: Although it is uncommon, GBS can affect pregnant women and the anesthesiologist may encounter such patients in his (her) daily practice. It is important to understand the peculiarities of GBS to adequately address the patient in the perioperative period, contributing to its better evolution.

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Resumo
Justificativa e objetivos: A síndrome de Guillain Barré (SGB) é uma doença neurológica autoimune que se caracteriza por uma polirradiculoneurite desmielinizante aguda ou subaguda.

Anestesia para cesariana em gestante com síndrome de Guillain Barré: relato de caso

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É um evento incomum durante a gravidez e um desafio para o anestesiologista pela possibilidade de comprometimento da função neuromuscular e de complicações respiratórias no pós-operatório. O objetivo deste trabalho é discutir o manejo anestésico da paciente gestante afetada pela doença.

Relato de caso: Paciente do sexo feminino com 30 anos, gestante de 38 semanas, com diagnóstico de óbito fetal havia um dia e SGB. Foi submetida à cesariana sob anestesia geral, evoluindo sem intercorrências no perioperatorio.

Conclusões: Apesar de ser incomum, a SGB pode acometer gestantes e o anestesiologista pode se deparar com esse tipo de paciente na sua prática diária. É importante compreender as peculiaridades da SGB para se abordar adequadamente a paciente no perioperatorio, contribuindo para a sua melhor evolução.

The initial blood pressure was $115 \times 75 \text{mmHg}$, sinus rhythm with a heart rate $= 100 \text{bpm}$ and pulse oxygen saturation $= 96\%$. Venoclisis was done with $18 \text{G}$ catheter, continuing with the administration of metoclopramide $10 \text{mg}$ and ranitidine $50 \text{mg}$ $30 \text{min}$ before induction of anesthesia. After administration of $100\%$ oxygen for three minutes via face mask, midazolam ($3 \text{mg}$) was administered and a continuous infusion of remifentanil ($0.5 \mu g \text{kg}^{-1} \text{min}^{-1}$) was initiated during three minutes, followed by lidocaine ($80 \text{mg}$), etomidate ($20 \text{mg}$) and rocuronium ($80 \text{mg}$).

In rapid sequence, tracheal intubation was uneventfully performed. Anesthesia was maintained with $2\%$ sevoflurane and remifentanil by continuous infusion ($0.2 \mu g \text{kg}^{-1} \text{min}^{-1}$). The procedure lasted two hours. At that moment T2 in TOF was noted; neostigmine ($3.0 \text{mg}$) and atropine ($1.5 \text{mg}$) were administered. After $30 \text{min}$, the patient was with good breathing pattern, T4/T1 ratio $>90\%$, and with cooperative demeanor. The tracheal extubation was uneventful. The patient was taken to the post-anesthetic recovery room, where she remained under continuous monitoring. The next day, the patient was transferred to the intensive care unit.

Discussion

In our case, general anesthesia was chosen for performing the cesarean section in a patient with GBS. As the fetus was not viable and the patient was in fasting for more than eight hours, general anesthesia was considered more beneficial versus spinal block.

Historically, it is considered prudent to avoid regional anesthesia in patients with preexisting neurological diseases. This conduct is based on the fact that these diseases may worsen; or a new deficit may develop perioperatively. What is the importance of the existence of a neurological disease and of neuraxial anesthesia? The presence of a pre-existing clinical or subclinical neurological impairment may increase the risk for new lesions or worsen the existing ones during the perioperative period.

This syndrome, known as double-crush, was first described in 1973 by Upton and McComas, and suggests that a nerve already compromised becomes more susceptible to injury in another place. Thus, a previous neurological
disease would be considered as the first risk factor (first crush) and other aggression (second crush) would be related to anesthesia, due to mechanical trauma by the needle or catheter, ischemia caused by the vasoconstrictor agent, or chemical injury (neurotoxicity) produced by the local anesthetic itself.

Both diseases of the central nervous system, like multiple sclerosis and others, as well as diseases of the peripheral nervous system (hereditary or not), are susceptible to complications after regional anesthesia. GBS is an acquired autoimmune peripheral neuropathy, characterized by an acute or subacute demyelinating polyradiculoneuropathy. GBS primarily affects peripheral nerves, but the proximal nerve roots and cranial nerves may also be compromised. Its etiology remains unknown.

Usually, GBS is preceded by infection, especially of upper respiratory pathways and gastrointestinal tract. Probably the mechanism involved is that of molecular mimicry. However, in some cases this association between prior infection and GBS is not evident or even reported. This syndrome is mainly characterized by a progressive ascending paralysis with areflexia and albuminocytologic dissociation on examination of cerebrospinal fluid. Weakness may be mild, for instance difficulty walking, or severe, such as quadriplegia and complete respiratory failure.3-5

GBS complicating pregnancy is a rare and of high-risk event. The annual incidence of GBS in the general population is 0.75–2 cases per 100,000 inhabitants.7 Men are 1.5 times more affected than women.2 The incidence increases with age1 and appears to be lower in pregnant women, in whom the disease arises primarily in the three months after childbirth. The end of pregnancy does not accelerate the recovery of the patient; rather, a worsening of symptoms occurs after delivery (both vaginal and surgical).7 A favorable outcome in most cases is observed, with neonatal survival rate of 95.7%.8 Despite the patient’s neurological commitment, uterine contractions and cervical dilatation are maintained, which makes possible the vaginal delivery.8

One should always keep in mind the possibility of autonomic dysfunction and of lower motor neuron lesion when doing anesthesia in a patient affected by GBS. The profound hypotension in response to simple position change, blood loss or positive airway pressure reflects the commitment of cardiovascular compensatory responses.9,10 Moreover, nociceptive stimuli, such as laryngoscopy, can trigger an exaggerated increase in systemic blood pressure. Because of this unpredictable behavior, it would be wise a continuous monitoring of systemic blood pressure with intra-arterial catheter, especially in cases of surgical procedures more complex or that involve major blood loss.9,10

In this case, the option for anesthesia was based on reports of worsening of clinical picture after spinal anesthe-sia, and the nature of the case: a pregnancy with a dead fetus. General anesthesia was induced with rapid sequence technique, because of the risk of bronchoaspiration, both by SGB and by pregnancy. The use of succinylcholine in SGB is contraindicated, due to the risk of severe and potentially fatal hyperkalemia.9-13

There is an increase (upregulation) of extrajunctional muscle nicotinic receptors of acetylcholine11,14 that, when depolarization occurs by the action of succinylcholine, lead to a large efflux of intracellular potassium to the plasma. It is prudent not to use succinylcholine after 48–72 h of onset of GBS picture,12 and its use should be avoided in patients with a recent history of the syndrome, because the return to normalcy may take weeks to years after the initial cause has ceased.12 When necessary, nondepolarizing muscle relaxants can be used10 and a careful monitoring of neuromuscular blockade should be instituted.

Ideally, before surgical procedures, patients should be investigated for pulmonary function,7 because although asymptomatic, they may present significant impairment of lung function, which may be exacerbated postoperatively, and ventilatory support must always be available.6-10

There is no discussion, in patients undergoing Cesarean section, as to the benefits of spinal block, which is the technique of choice. General anesthesia is associated with increased maternal mortality, mainly due to failures in tracheal intubation, difficulty to ventilate and oxygenate and pulmonary aspiration of gastric contents. In SGB, the regional anesthesia can provide benefits, because of the great autonomic lability present.15 However, there are reports of development of the syndrome and neurological worsening of symptoms after epidural anesthesia.7,10,16-17

Given that the SGB may have aggravated its course during the perioperative period,8 it becomes difficult to assess these associations. There are also several cases of favorable outcomes after regional anesthesia8,18-20 and there is no evidence that regional anesthesia can trigger the disease.16 Therefore, GBS should not be considered an absolute contraindication to neuraxial anesthesia,8,9,18 There is an increased sensitivity to local anesthetics, so the dose should be reduced and, wherever possible, fractionated, aiming to avoid lengthy blocks.19

General anesthesia, despite all caveats, is safe in patients with SGB9 and should be preferred in cases with respiratory involvement.15 Preference is given to anesthetics with fast metabolism and with little hemodynamic repercussion.

In this case, if the fetus was viable, regional anesthesia would be a more logical choice and the benefits would outweigh the risks.8 The option by general anesthesia prevented the invasion of neuraxis, and fetal unfeasibility minimized the potential risks of the technique.

We conclude that, whatever the anesthetic technique chosen by the anesthesiologist, it should be discussed with the surgical team, the patient and her relatives,5,16,18,19 to explain the risks associated with each type of procedure.

Conflicts of interest

The authors declare no conflicts of interest.

References