



Regional anesthesia for patient with restless legs syndrome: case report

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INTRODUCTION

Restless legs syndrome (RLS) or Ekborn syndrome is a common, usually unrecognized neurological disorder with sensory and motor symptoms (1). It is probably genetically based and affects around 10% of the population, but it is still underdiagnosed, underreported and undertreated. Most often it is idiopathic, however it may be associated with iron deficiency, uremia, pregnancy, folate deficiency, diabetes mellitus, rheumatoid arthritis, fibromyalgia, hypothyroidism, Parkinson's disease and depression (2). It is more frequent in middle aged women, but can affect both sexes as well as children (3). One theory suggests that dopamine and serotonin imbalance causes RLS, the effect is similar to Parkinson's disease (4). A diagnosis of RLS often relies on the patient's description of symptoms. Patient who suffers from RLS has urge to move, associated with legs paresthesia and dysesthesia (sensory symptoms) and voluntary and involuntary leg movements (motor symptoms) (5). Symptoms usually occurs at rest, in the evening and at night and are worsened by immobilization, withdrawal of dopaminergic agents, sleep deprivation and blood loss (6). So, it is not a surprise that acute exacerbation can occur in perioperative settings (7). The pharmacologic treatment of RLS refers to dopamine precursors (carbidopa-levodopa), dopamine agonists, (pramipexole, ropirinole), opioids, benzodiazepines (clonazepam), anticonvulsants (gabapentin) and other drugs such as carbamazepine, clonidine, propranolol and amantadine which are mentioned in some smaller studies (8).

CASE REPORT

A 43-yr-old woman, 162 cm tall, weighing 56 kg, who suffers from familial, idiopathic RLS underwent total hip replacement surgery because of continued pain in her right hip caused by instability of the implant. She was born with dysplastic hips and her first surgery was when she was 12-yr-old. She experienced general anesthesia then and also for the next three surgeries, twice for endoprosthesis of the hip and once for shoulder arthroscopy. She mentioned that she always needed "more anesthetic". Every time in preoperative settings and also during the wakening from general anesthesia, she had an acute exacerbation of RLS symptoms. It was suicidal-like dysesthesia and pain. She said that after the second anesthesia, cramps and leg movements were so strong, that they caused endoprosthesis luxation. She also said, that she has never remembered the first three postoperative days, because she has been heavily sedated in the ICU room. We talked about other possible anesthetic techniques for her, because we wanted to avoid this stressful

wakening and sedation afterwards. We decided to use spinal anesthesia with sedation which would allow her to be awake and conscious. The night before the surgery she took her usual dose of ropinirole (4 mg) orally, slept for 4 hours and the rest of the night she walked. Half an hour before the surgery, she received 7.5 mg of midazolam orally. Intrathecal anesthesia was performed with 27-gauge cutting-bevel spinal needle. 0.5% levobupivacaine 3mL was used as a local anesthetic. At the moment the spinal anesthesia started to have the effect, she felt uncontrolled desire to move the legs. But she couldn't. She developed tachycardia and systolic hypertension at 200 mmHg. It lasted for few seconds, because she received 150 mg of Propofol iv. and 0.1 mg of Fentanyl iv. She was breathing spontaneously and remained haemodynamically stable after the induction of anesthesia. Fifteen minutes later, she was fully awake but did not have a desire to move the legs. She received fentanyl boluses and propofol in continuous infusion at 8 mg/kg/hour, but she remained conscious and talking. She could not move the legs, because of the spinal anesthesia, but did not have the desire to move them as well. Blood loss was monitored, and transfusion was administered. After the surgery, which lasted for four hours, she could move the legs, but still did not have the symptoms of RLS. The whole received dose of propofol was 600 mg and fentanyl 1.25 mg iv. She received fentanyl in continuous infusion 0.1 mg/hour until the next day in ICU which had an analgesic effect and blocked the RLS symptoms. Serum ferritin was monitored besides the usual laboratory parameters. It was less than 50 mg/mL, so she received oral iron (100 mg/d) supplement. The next day she took her usual dose of ropinirole and received Tramadol boluses of 50 mg and was discharged to the ward. She was satisfied with this kind of anesthetic regimen and said that she would always choose it for another elective surgery if it is possible.

DISCUSSION

Anesthesia and surgery can exacerbate symptoms in patients with RLS. It is primarily because of associated conditions that include immobility, stress and blood loss. Use of neuroleptics (droperidol (9), prochlorperazine (10) and other drugs that block central dopamine receptors (metoclopramide, metopimazine, hydroxyzine and promethazine and antidepressants) (11) can also trigger acute exacerbation of RLS. If the RLS is known, like in our patient, it is easier to prepare the patient and prevent the risk of worsening the symptoms. But this condition is still poorly recognized, because of a variety in presentation from mild to moderate and severe form.

Over the years, it was considered that regional anesthesia, in this case spinal anesthesia, might worsen or even cause RLS (12). Researchers are investigating neurologic problems that are connected either with the spinal cord or the brain, but still the main cause of RLS is unknown (13). Some other studies suggest even implantation of the pump for intrathecal drug delivery of morphine and bupivacaine which successfully resolve the symptoms of RLS (14). Our approach was to choose

the best anesthetic technique, taking into consideration patient's history and anamnestic details about previous general anesthesia and the type of surgery. It refers to a need for motor blockade during the surgery and post-operative need for immobilization. We agreed with the patient that it would be better if she stayed conscious and we used opioids (15) to achieve that goal. Titration of the opioids in patients with RLS should be addressed individually, because our patient received much more opioids than we expected she could take according to her body mass. We were monitoring her neurological status and talked to her all the time about her symptoms, so opioids were used just to treat symptoms associated to RLS. It was relatively easy because we had a cooperative patient. Special attention should be focused on children or demented patients who cannot express their feelings and it is hard to know if there are some signs of acute RLS exacerbation.

There is a need for a longitudinal cohort studies of such patients to help establish an anesthetic method of choice for different procedures. It is very important to diagnose such patients before the procedure, to take detailed, sleep and personal history and then determine the most appropriate anesthetic method. If patients are taking oral therapy, they should take it regularly or even increase the dose to 3 to 4 doses per day if the patient is bedridden. All drugs that block central dopamine receptors should be avoided, so for antiemetic drugs we can use droperidone or ondansetron and for sedative benzodiazepine (clonazepam) (16). If the regional anesthesia is the chosen strategy, it will be probably necessary to use parenteral opioids to prevent the symptoms of RLS. Maybe one important point is the patient's need to stay conscious but at the same time to prevent the urge to move with mild sedation. This balance is not always easy to manage, especially in those patients with RLS, because they do not fit into our body mass pharmacological calculations. We have to adjust dosage individually, but also have to be aware of potential toxicity of drugs. Benzodiazepines could be an alternative, either used in boluses or in continuous infusion and further investigations should focus on this combination in similar cases. We suggest using regional anesthesia in combination with mild sedation whenever it is possible.

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