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Case Report

Pregnancy in Women with Posterior Cord Neurostimulator for the Treatment of Complex Chronic Pain Syndromes. Review of Existing Literature and Recommendations: A Case Report

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Abstract

Posterior cord neurostimulation therapy is used to treat several syndromes such as complex regional pain. Many patients treated in this way are young women of a reproductive age, who subsequently can become pregnant, although the effects of this therapy during pregnancy and on the development of the fetus are still unknown.

We present a clinical case of a 26 year-old patient who became pregnant after posterior cord neurostimulator implantation. The purpose is to review and synthesize the existing literature and recommendations about the use of neurostimulation during pregnancy and childbirth.

Introduction

Complex regional pain syndrome type I - also known as reflex sympathetic dystrophy - is common in young people, originating in trauma to limbs, orthopedic or vascular surgery and medical conditions such as osteoarthritis, discopathies, lupus, acute myocardial infarction or cerebrovascular accidents. Typically, peripheral nerve injury cannot be demonstrated by electromyography, which is related to the disproportion between the intensity of the symptoms and the severity of the trauma.

While posterior cord neurostimulation treatment is regarded as perfectly applicable to young women in fertile age, its use is controversial during pregnancy, given that the effects of stimulation on gestation and fetal development are still unknown.

Several cases have been published of young women that, after implantation of the device, carried their pregnancy to term. On this occasion, we present the case of a patient of the Rafael Méndez Hospital (Lorca, Murcia, Spain) with the aim of reviewing the existing literature published to date on this subject during pregnancy, childbirth and puerperium, as well as recommendations concerning the management of pregnant women with this device.

Clinical Case

25 year old patient with a previous eutocic birth presenting a reflex sympathetic dystrophy in right upper limb after carpal tunnel surgery carried out in our Hospital pain unit and subjected to several failed blocks, including the ganglion impart of Walter. She was referred to a Hospital in Valencia in 2013, where, after assessment, she was implantated a posterior neurostimulator cord implant, the battery being housed in the subcutaneous tissue of the left iliac fossa. The patient had a history of hypertension, mild preeclampsia and gestational diabetes during a previous pregnancy.

In November 2014, the patient communicated that she was pregnant and started uneventful gestation controls in the pregnancy unit of our Hospital. The neurostimulator worked properly, although during the second trimester, the team from the pain unit decided to stop it in the absence of information concerning possible risks on the fetus.

During the pregnancy, the patient developed gestational diabetes, which was controlled by diet and subclinical hypothyroidism. After week 34 of pregnancy her blood pressure increased. In week 39 gestations was ended by preeclampsia, inducing labor with a vaginal dinoprostone device. Induction was successful and delivery eutocic, without the administration of epidurals because of rapid dilation and expulsion.

Four weeks after childbirth the mother was reassessed and the neurostimulatorwas restarted - it was seen to be working properly and had not suffered any damage during childbirth.

Discussion

Drug treatment in patients with reflex sympathetic dystrophy syndrome is, in certain cases, considered incompatible with pregnancy. This is due to the fact that part of the treatment options includes the use of anticonvulsants and antidepressants classified as category C during pregnancy [1].

The increased use of posterior cord neurostimulation increases the chances of it being used in patients of childbearing age. The impact of the use of such neurostimulators both on the mother and the fetus are unknown and the cases that have been published to date are scarce. Randomized clinical trials are impossible, so that evidence will depend on observational studies [2]. The several meta-analyses and reviews consulted on of the effects of these devices do not include patients who are pregnant [3], excepting two articles that mention patients who maintained the use of their neurostimulator throughout pregnancy with no impact on the fetus [4,5].

A systematic review [2] suggested this treatment for patients suffering an untreated chronic pain syndrome who plan a pregnancy soon, in order to avoid the combination of its effects at a personal and psychological level with the hormonal and emotional components of pregnancy. Moreover, we found one meta-analysis that described a decrease in pain during the first phase of delivery in patients carrying the device [6].

Another case, in Korea, assessed the situation of a pregnant woman with reflex sympathetic dystrophy syndrome and carrier of the neurostimulator, which ended in abortion at 6 weeks [7], an event that may be related with levels of neurostimulation above 16 mg (1.6μT) that some authors have associated with a strong risk of early abortion [8]. In Spain, there were two described cases of women carrying neurostimulators whose pregnancies ended in a cesarean birth [1,9,10].

Takeshima et al described a case of a patient with a neurostimulator at chest level, which was used intermittently when the pain level was maximum [11], after which the main complications of posterior cord stimulation therapy were established: migration of the cable (13.2%), breakage of the cable (9.1%), infections (3.4%), malfunction of hardware (2.9%), unwanted stimulation (2.4%), battery failure (1.6%) and pain in the implant area (0.9%). In the case we present in this article, we considered the changes produced by pregnancy such as the increase in weight and abdominal perimeter, both of which could increase the risk of the electrodes breaking.

Based on the above, the recommendations at the beginning of gestational control in a patient fitted with a neurostimulator include not using it during pregnancy if possible. The rest of measures regarding the end of gestation should be individualized and be treated in an interdisciplinary way by the obstetrics, anesthesia and pediatrics teams.

In the event of the vaginal termination of pregnancy, as in our case, we find no absolute contraindication. Although there is no consensus concerning the appropriateness or risks of administering epidurals during pregnancy, antibiotic prophylaxis is recommended if the patient is fitted with a neurostimulator [10] to avoid the risk of infection by the neurostimulator.

When pregnancy ends in a caesarean, the recommendations are that it should be carried out with the neurostimulator switched off so as to avoid artifacts in the electrocardiogram. Also, using bipolar energy in very short bursts to prevent the electrocautery equipment from damaging the electrodes (transmitted heat can alter the stimulation threshold). Monopolar energy is not recommended because it causes painful electrical stimulation [10].

In all cases, the pediatrician team of the center should also be informed so they may consider whether the pharmacological treatment given to the patient during pregnancy may affect the newborn [10].

Finally, after birth, the integrity and correct functioning of the system should be checked to rule out any damage derived from the natural changes that take place during pregnancy, such as weight gain, increased abdominal perimeter or the effort of pushing on the mother's part during vaginal childbirth.

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