

Idiopathic facial nerve palsy in pregnancy – facts and myths

Samoistne porażenie nerwu twarzowego w ciąży – fakty i mity

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ABSTRACT:

Idiopathic facial nerve palsy, also called Bell's palsy, can pose a challenge for clinicians if a pregnant woman reports symptoms of facial paresis. The incidence of Bell's paralysis in pregnant women is almost three times higher than in the non-pregnant women's age group. The problem is lack of guidelines for treatment of idiopathic facial nerve palsy in this group of patients. Randomized studies, but without participation of pregnant women, showed greater efficacy in the return of nerve function after early treatment with corticosteroids than with other methods. The dilemma concerning therapy is intensified by the fact that prognosis regarding the return of facial nerve function in pregnant women is significantly worse than in the remaining population, and the weakness of the facial muscles is diagnosed in a young woman. This article presents an example of a patient consulted in our department and a review of current literature. We introduce recommendations for treatment of pregnant women with facial nerve palsy. Benefits, advised medicines, doses, necessary precautions and potential side effects of corticosteroids, being the only ones that have proven efficacy in the treatment of Bell's paralysis in pregnant women are discussed.

KEYWORDS:

Bell's palsy, idiopathic facial nerve palsy, pregnancy, puerperium, treatment

STRESZCZENIE:

Idiopatyczne porażenie nerwu twarzowego, zwane również porażeniem Bella, może stanowić dla klinicystów duże wyzwanie, jeżeli z objawami niedowładu mięśni twarzy zgłasza się pacjentka w ciąży. Częstość występowania porażenia Bella u kobiet w ciąży jest prawie trzy razy większa, niż w odpowiadającej wiekowo grupie kobiet nieciężarnych. Problem stanowi brak wytycznych leczenia samoistnego porażenia nerwu twarzowego w tej grupie chorych. W randomizowanych badaniach, ale bez udziału ciężarnych pacjentek, potwierdzono większą skuteczność w powrocie funkcji nerwu po wcześnie włączonym leczeniu glikokortykosteroidami, w porównaniu z innymi metodami. Dylemat dotyczący terapii potęguje fakt, iż rokowanie co do powrotu funkcji nerwu twarzowego u ciężarnych są znamienne gorsze niż w pozostałej populacji, a niedowład mięśni twarzy dotyczy przecież młodej kobiety. W artykule na przykładzie chorej konsultowanej w Klinice oraz na podstawie przeglądu aktualnego piśmiennictwa, przedstawione zostały zalecenia postępowania w samoistnym porażeniu nerwu twarzowego u kobiet w ciąży. Przedstawiono korzyści, zalecane preparaty, dawki, niezbędne środki ostrożności i potencjalne skutki uboczne stosowania kortykosteroidów, które jako jedyne mają potwierdzoną skuteczność w leczeniu porażenia Bella u kobiet będących w ciąży.

SŁOWA KLUCZOWE: porażenie Bella, samoistne porażenie nerwu twarzowego, ciąża, połóg, leczenie

INTRODUCTION

Facial nerve paralysis is one of many reasons for patients' visits in otolaryngologic clinics, most often as part of the emergency department. As a rule, the disease is characterized by a favorable

prognosis, however, in the case of incomplete recovery, facial nerve dysfunction can seriously affect the patient's quality of life [1].

The most common form of the disease is idiopathic facial nerve palsy, diagnosed through exclusion of other etiologies, also re-

ferred to as Bell's palsy. The name of the disease comes from the surname of author Charles Bell, who was the first to describe the characteristic symptoms of this disease in 1830 [1].

According to the definition, Bell's palsy is defined as spontaneous, unspecified, unilateral facial nerve paralysis of the lower motor neuron, which may lead to partial or complete paralysis of facial muscles [1].

Facial nerve palsy, usually with a self-limiting course, can cause significant, temporary malfunctions in the oral cavity and inability of the eyelids to fully close. Considering the long recovery period, this can lead to corneal erosion and it destructively affects the patient's psyche.

Treatment aims to improve the facial nerve's function and the return of facial mimic muscles activity [2].

A separate subject, which constitutes a challenge for clinicians, is Bell's paralysis in pregnant patients due to lack of unambiguous guidelines on therapeutic management.

The article aims to discuss, based on the available sources and clinical case, treatment methods recommended in pregnant women and women in the postpartum period.

CASE REPORT

AA 30-year-old patient, previously healthy until the 36th week of pregnancy, reported to the doctor due to symptoms of increasing right-sided facial asymmetry. Symptoms appeared on the previous day and were not accompanied by any other ailments such as dizziness, hearing loss, pain or otorrhea. The woman has not had any recent infections as well. The course of pregnancy has been normal until now except for impaired fasting glucose. The patient did not use any medications.

Physical examination demonstrated normal tympanic membranes on both sides, and the tuning-fork test (256-4096 Hz) gave a central result for the Weber test and positive Rinne's test bilaterally. Palpation revealed no pathology of salivary glands, which was confirmed in ultrasound examination. The patient's face was symmetrical at rest, while asymmetry of the facial muscles on the right side was visible during movement, especially when the patient closed her eyes. Activity of the facial nerve on the right side was rated using the House-Brackmann scale at grade 2 and on the left side at grade 1.

Laboratory blood tests, both morphology and biochemical parameters were correct.

The patient was prescribed Encorton at a dose of 60 mg in the morning, at a constant time for 5 days, then a gradual reduction of the dose (5 mg less every second day to withdrawal of medication). The patient was recommended to consult her obstetrician for acceptance of treatment and monitoring of blood glucose, the patient's blood pressure and fetal size during steroids treatment. The instructions for rehabilitation training of the facial muscles were presented to the patient and she was recommended to continue exercises few times a day..

The patient gave birth to a healthy child at 38 Hbd by spontaneous labor. Facial nerve palsy withdrew completely after 4 weeks from onset of symptoms. The patient performed audiological tests after another 4 weeks and they showed no abnormalities.

DISCUSSION

Bell's palsy in pregnant patients

The first one to observe more frequent occurrence of Bell's palsy in pregnant and puerperium patients was Charles Bells in 1840 [1]. Pathology occurs from 2 to 4 times more often in pregnant women than in non-pregnant women [3]. It is estimated that annually out of 100,000 pregnant women 45 will experience Bell's palsy, compared to 17.4 cases of paralysis per 100,000 in non-pregnant women in the same age group [1, 4].

Differences in the incidence of Bell's palsy depending on the period of pregnancy were also confirmed. The vast majority of cases concern the third trimester of pregnancy (71%) and the early stage of puerperium (21%) [5]. Pathophysiological background for such a distribution of diseases have not been established so far, but taking into account a number of different physiological changes taking place in the female body during pregnancy, the most important factors may be: an increase in total body water content and edema tendency, immunosuppression and increased susceptibility to viral infections, in particular, reactivation of herpes virus (HSV), significantly elevated levels of estrogens and progesterone in the blood, increased blood clotting, and in some women, pregnancy-induced hypertension or impaired glucose tolerance [1].

It is recognized that pregnancy with its duration is a condition of an increasing immune tolerance, which is the result of elevated blood cortisol. However, the state of tolerance to fetal antigens affects the general immunity of women, especially in the third trimester [3, 6]. This may trigger activation of the herpes virus, which is found in its latent form in the nucleus of facial nerve as de novo infection. The inflammatory reaction that takes place following primary or reactivated infection may directly damage the nerve in the demyelination process [3].

Another pathomechanism leading to paralysis in pregnant women may be related to fluid retention in the body during this period. In this situation, increasing volume of extracellular space and perineural edema, may contribute to nerve compression and affect the impairment of its function. Nerve compression in a place where it is limited by closed space, i.e., in the bony canal, causes neuropathy [1, 3, 6]. Some authors indicate abnormal carbohydrate metabolism and gestational diabetes as a risk factor for spontaneous facial nerve palsy, especially with bilateral symptoms [7].

However, no association was observed with the occurrence of spontaneous facial nerve paralysis in pregnancy and adverse perinatal outcomes and fetal condition [8, 9].

It is estimated that a specific etiology of facial nerve paralysis in pregnant women, such as: injuries, otitis media, myasthenia, parotid gland inflammation or vascular malformations, is responsible for paralysis in 14 to 21 out of every 100 pregnant patients affected by pathology [3, 10].

Symptoms and course

Symptoms of facial nerve paralysis in pregnant women are the same as in the general population [3]. Initially, the patient may experience prodromal symptoms, such as sound sensitivity, ear pain, and impaired taste [1]. Further developments in this case typically include: smoothing of wrinkles on the occupied side, smoothed nasolabial fold, drooping mouth corner, inability to wrinkle the forehead, lift the eyelid, tighten the lips, show teeth, whistle [3]. The course of illness may also include the so-called Bell's symptom, which is the exposure of upper part of the sclera when closing the eyelid [1].

This also includes dry eyes, changes in taste sensation on anterior 2/3 of tongue and noise sensitivity.

Typical symptoms of acute facial nerve palsy develop within 24-48 hours and can progress to complete paralysis within a few days, usually up to one week [6]. Gilman et al. suggest that progression to complete paralysis is more frequent in pregnant women [10].

Prognosis

The prognosis for return of normal nerve function in pregnant women with Bell's palsy is worse than in the general population. Gilman et al. report that only 52% of pregnant women regained facial muscle function compared to 77-88% of non-pregnant women of similar age [10]. This is mainly due to the differences in therapy, due to the fact that pregnant women al-

ways have concerns about the adverse effects of drugs on the course of pregnancy and hence their avoidance or postponement of treatment. The prognosis for patients with incomplete facial nerve paralysis is very good - almost complete recovery, with minimal impairment of facial muscle function [5]. Prognoses are significantly worse in the case of progression to complete paralysis, where functional deficits remain in even as much as approximately 50% of patients [1, 10].

Treatment

The therapeutic strategy for facial nerve palsy in pregnancy primarily consists of conservative methods, but surgical procedures are also reported.

Therapy should begin with protection of the cornea exposed to drying and damage. To reduce troublesome symptoms such as: dry eye, sandy, gritty sensation in the eyes, burning sensation, redness of the eye, it is recommended to apply moisturizing, sterile eye drops several times a day, as well as ointments at night, used together with a moisture chamber that can be used during the day as well [1]. It is advisable to refer the patient to the ophthalmologist for assessment of the anterior segment of the eye [1].

In the past various medications were used in the therapy of Bell's palsy in pregnant women, such as: diuretics, antivirals, pentoxifylline and corticosteroids [1, 11]. Current recommendations do not include routine use of other drugs than corticosteroids due to lack of knowledge regarding their level of safety and efficacy [1]. The most commonly used corticosteroids during pregnancy are prednisolone, dexamethasone and betamethasone [2].

During pregnancy, the choice of medicine should take into account the drug's potential risk for the mother and the fetus. Dexamethasone and betamethasone (but not prednisolone and methylprednisone) pass through the placental barrier much more easily and reach higher concentrations in the fetus, and should therefore be used in fetal treatment. However, prednisone and prednisolone have a limited effect on the fetus, due to the fact that they are transformed into inactive forms in the placenta which is why it is recommended to choose these preparations if they are necessary in mother treatment [1, 12].

It should be emphasized that the risk associated with using corticosteroids depends on many factors. These include gestational age, maternal and fetal comorbidity, drug type, dose size and duration of therapy [1, 13].

Possible complications on the mother's side include stomach

ulcer, psychosis, fluid retention, development of diabetes and osteoporosis [1, 14]. Risk to the fetus includes adrenal suppression, low birth weight and risk of developing congenital malformations - most often cleft lip, especially during the first trimester of pregnancy [1, 6, 15].

Glucocorticosteroids are used in pregnant women for maternal treatment, also in treatment of asthma and autoimmune diseases such as: Cohn's disease, systemic lupus and rheumatoid arthritis [6]. They are administered in fetal treatment to accelerate fetal lung maturation, in cases of premature birth risk.

Long-term observation of patients treated chronically with glucocorticosteroids during pregnancy for various reasons, did not provide certain evidence or a specific risk of delivering a child with defects [1, 16, 17]. It should be emphasized that the most critical period of defect formation is the first trimester of pregnancy, which is why the described risks rarely affect women with Bell's palsy, in whom the disease usually occurs in the third trimester, and the period of taking glucocorticosteroids is relatively short.

Independent randomized trials by Ramsey et al. (2000), Sullivan et al. (2007) and Enström et al. (2007) confirm that early (from 48 to 72 hours) use of steroids in treatment of Bell's paralysis is associated with improvement in total recovery results by 17-20% [18, 19, 20]. Unfortunately, there are no results from randomized trials for pregnant women. The available results of treatment of Bell's palsy in pregnancy come from retrospective works, in which the authors confirm the legitimacy of therapy with steroids also in pregnant women, especially in complete paralysis [6, 10, 11]. Initial treatment of total facial nerve palsy should include oral prednisolone 1 mg/kg body weight for 5 days with subsequent dose reduction.

Alternative dosing regimens include:

- prednisolone 25 mg, 2 times a day for 10 days
- prednisolone 60 mg for 5 days, followed by a dose reduction to 10 mg for 5 consecutive days

Also in the postpartum period, steroid therapy does not require weaning due to a small part of the dose penetrating into milk and a short duration of therapy [11, 21].

The use of steroids in pregnant women should always be consulted with the obstetrician in charge and requires monitoring of blood glucose and maternal pressure, maternal and fetal body

weight as well as parameters of fetal well-being. The pregnant woman must also be aware of the need to report gastrointestinal symptoms, infections, as well as mood and sleep disorders.

Pregnant women with concomitant diseases, such as poorly controlled diabetes or hypertension will require special verification and balanced decisions.

There is some controversy regarding the use of antiviral drugs in facial nerve palsy during pregnancy. Some studies indicate that these drugs, used as adjunctive therapy together with corticosteroids, give better results than when using only corticosteroids [6, 7, 22]. Their goal is to prevent activation of the latent form of HSV in late pregnancy. In the absence or slight improvement in patients taking only glucocorticosteroids, inclusion of antiviral drugs may be considered after careful assessment of individual risk. Antiviral treatment includes nucleoside analogues: valacyclovir and famciclovir, which are classified as having B pregnancy category and are associated with low risk for the mother and the fetus.

The use of physical therapy methods, such as exercises or electrostimulation, as well as alternative methods, such as acupuncture or hyperbaric oxygen therapy, have no proven efficacy in the treatment of spontaneous facial nerve palsy [22].

Reports on treatment of Bell's palsy in pregnant patients using facial nerve decompression are extremely rare. This is a small but additional risk for the fetus. Surgical treatment can be considered in case of severe impairment of nerve function and lack of improvement after inclusion of glucocorticosteroids, after consultation with the gynecologist in charge. Further consideration should then be given to the risks and benefits of planned induction of labor with consequent decompression of the facial nerve and the patient's consent to a worse prognosis of the return of facial muscles.

CONCLUSIONS

Pregnant women diagnosed with Bell's palsy and having no absolute contraindications should be included in early corticosteroid therapy. Postponing the decision to treat with steroids due to concerns regarding risk for the fetus and pregnant woman may result in the passage of an early, critical period for the effectiveness of therapy, and thus contribute to poorer prognosis in this group of patients. Optimal therapy requires cooperation with the obstetrician in charge.

References

- Hussain A., Nduka C., Moth P., Malhotra R.: Bell's facial nerve palsy in pregnancy: a clinical review. *Journal of Obstetrics and Gynaecology*. 2017; 37 (4): 409–415.
- Kemp M.W., Newnham J.P., Challis J.G., Jobe A.H., Stock S.J.: The clinical use of corticosteroids in pregnancy. *Human Reproduction Update*. 2016; 22 (2): 240–259.
- Aditya V.: LMN Facial Palsy in Pregnancy: An Opportunity to Predict Preeclampsia – Report and Review. *Case Reports in Obstetrics and Gynecology*. 2014.
- Kovo M., Sagi Y., Lampl Y., Golan A.: Simultaneous bilateral Bell's palsy during pregnancy. *The Journal of Maternal-Fetal & Neonatal Medicine*. 2009; 22 (12): 1211–1213.
- Pourrat O., Neau J.P., Pierre F.: Bell's palsy in pregnancy: underlying HELLP syndrome or pre-eclampsia?. *Obstetric Medicine*. 2013; 6 (3): 132–133.
- Vrabec J.T., Isaacson B., Van Hook J.W.: Bell's palsy and pregnancy. *Otolaryngol. Head Neck Surg*. 2007; 137: 858–861.
- Adour K.K., Ruboyanes J.M., Von Doersten P.G., Byl F.M., Trent C.S.: Quesenberry CP Jr. Bell's palsy treatment with acyclovir and prednisone compared with prednisone alone: a double-blind, randomized, controlled trial. *The Annals of Otolaryngology, Rhinology & Laryngology*. 1996; 105: 371–378.
- Fawale M.B., Owolabi M.O., Ogunbode O.: Bell's palsy in pregnancy and the puerperium: a report of five cases. *African Journal of Medicine and Medical Science*. 2010; 39: 147–151.
- Katz A., Sergienko R., Dior U., Wiznitzer A., Kaplan D.M., Sheiner E.: Bell's palsy during pregnancy: is it associated with adverse perinatal outcome?. *The Laryngoscope*. 2011; 121: 1395–1398.
- Gillman G.S., Schaitkin B.M., May M., Klein S.R.: Bell's palsy in pregnancy: a study of recovery outcomes. *Otolaryngol. Head Neck Surg*. 2002; 126: 26–30.
- Kunze M., Arndt S., Zimmer A., Földi M., Hanjalic-Beck A., Echternach M.: Idiopathic facial palsy during pregnancy. *HNO*. 2012; 60: 98–101.
- Van Runnard Heimel P.J., Franx A., Schobben A.F., Huisjes A.J., Derks J.B., Bruinse H.W.: Corticosteroids, pregnancy, and HELLP syndrome: a review. *Obstetrical & Gynecological Survey*. 2005; 60: 57–70.
- Rennick G.J.: Use of systemic glucocorticosteroids in pregnancy: Be alert but not alarmed. *Australasian Journal of Dermatology*. 2006; 47: 34–36.
- Gregersen T.L., Ulrik C.S.: Safety of bronchodilators and corticosteroids for asthma during pregnancy: what we know and what we need to do better. *Journal of Asthma and Allergy*. 2013; 6: 117–125.
- Park-Wyllie L., Mazzotta P., Pastuszak A.: Birth defects after maternal exposure to corticosteroids prospective cohort study and meta-analysis of epidemiological studies. *Teratology*. 2000; 62: 385–92.
- Liggins G.C., Howie R.N.: A controlled trial of antepartum glucocorticoid treatment for prevention of the respiratory distress syndrome in premature infants. *Pediatrics*. 1972; 50: 515–525.
- Weinstein L.: Syndrome of hemolysis, elevated liver enzymes, and low platelet count: a severe consequence of hypertension in pregnancy. *American Journal of Obstetrics & Gynecology*. 1982; 142: 159–167.
- Ramsey M.J., Der Simonian R., Holtel M.R., Burgess L.P.: Corticosteroid treatment for idiopathic facial nerve paralysis: a meta-analysis. *Laryngoscope*. 2000; 110: 335–341.
- Sullivan F.M., Swan I.R., Donnan P.T., Morrison J.M., Smith B.H., McKinstry B.: Early treatment with prednisolone or acyclovir in Bell's palsy. *The New England Journal of Medicine*. 2007; 357: 1598–1607.
- Engström M., Berg T., Stjernquist-Desatnik A., Axelsson S., Pitkäranta A., Hultcrantz M.: Prednisolone and valaciclovir in Bell's palsy: a randomised, double-blind, placebo-controlled, multicentre trial. *The Lancet Neurology*. 2008; 7: 993–1000.
- Schäfer C.H., Spielmann H.: Medication in pregnancy and lactation, 7. Aufl. Urban & Fischer, München. 2006; S 376ff, 156ff.
- Hato N., Yamada H., Kohno H.: Valaciclovir and prednisolone treatment for Bell's palsy: a multicenter, randomized, placebo-controlled study. *Otol. Neurotol*. 2007; 28: 408–13.
- Salinas R.A., Alvarez G., Daly F., Ferreira J.: Corticosteroids for Bell's palsy (idiopathic facial paralysis); *Cochrane Database of Systematic Reviews*; 2010; CD001942. doi: 10.1002/14651858.CD001942.pub4.

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