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Update Treatment for Prolactinoma

Chávez Hernández María Margarita[1], Jiménez Báez María Valeria[1], Armijo Medina María Fernanda[2], Domínguez Leyva Jorge Miguel[2], Góngora Valencia Karen Alejandra[2], Góngora Valencia Karen Alejandra[2] Guerra Rentería Sergio Geovanni[1], Sandoval Jurado Luis[1]

[1]Mexican Social Security Institute . Planning Coordination and Institutional link. Cancún, Quintana Roo, México
[2]Clinical Cycles School of Medicine Quintana Roo University. Regional General Hospital of Zone Number 17, Cancún Quintana Roo México.

Corresponding Author - *valeria.jimenez @ gmail.com*

Abstract

Prolactinomas are the most common type of functional pituitary tumor. The present manuscript is an update on the treatment modalities for prolactinomas. Effective hyperprolactinemia treatment is of great importance, due to its potential deleterious effects including infertility, gonadal dysfunction and osteoporosis. Dopamine agonist therapy is the first line of treatment for prolactinomas; recurrence of disease after cessation of the drug may occur in patients. Its safety profile remains high, allowing its use during pregnancy.

Keywords: ***Prolactinomas, dopamine agonist, pituitary tumor, Endoscopic endonasal transsphenoidal surgery, Radiosurgery***

1. Introduction

Once a pituitary tumor is diagnosed, it is known that the ways to treat it can be surgical, radiological and medication. The pharmacological compounds used in clinical practice to treat prolactinomas are dopamine 2 receptor agonists. Among these, the most commonly used are bromocriptine, cabergoline, and quinagolide. The efficacy of these three dopamine agonists is similar.[1] With the new updates of the treatment of prolactinomas, it is very important to review the relationship between prolactinemia and fertility, with the use of dopamine agonists, of which cabergoline is considered as the first option for prolactinomas.[2] However, it is important. Emphasize that dopamine agonists are generally responsible for restoring the gonadal axis and fertility. Dopamine agonists such as Bromocriptine restore ovulation by 80-90% and 68% of cases have shown a decrease in tumor size> 25%. Cabergoline is currently suggested as the first option due to its long half-life and the lower percentage of adverse effects.[3] Prolonged treatment with bromocriptine has been associated with tumor fibrosis and increased consistency[4] Reduces PRL(prolactine) levels in 95% of microprolactinomas and this effect depends on the dose.[5,6] Its side effects are less frequent, serious and lasting than those of Bromocriptine.[7]

2. Body paragraphs

To verify the pharmacological treatments used to treat prolactinomas and to determine, based on the literature review, the efficacy of each medication.

References review of original works, and clinical guidelines, from 2012 to 2017 in Spanish and English in the adult population. The search was carried out in PubMed, the descriptor "prolactinoma" in relation to the subtitles MeSH "dopaminergic agonists" and "treatment".

Some dopamine agonists, such as pergolide, quinagolide, and cabergoline, have shown better tolerability and result in the reduction of tumor size with respect to bromocriptine. It has been concluded that the treatment of choice for prolactinoma is cabergoline because of its long half-life since it can be administered once or twice a week orally since it avoids side effects.

Efficacy with respect to the normalization of PRL concentrations, as well as being useful for decreasing tumor size. The initial dose used in cabergoline is 0.25 to 0.5 mg per week, which can be administered up to 1 mg per week.[5] Bromocriptine is associated with the presence of greater adverse effects, so it is not of choice. Bromocriptine is a D2 agonist, acts on pituitary lactotrophs by antagonizing PRL production and restores ovulation in 80 to 90% of patients. Similarly, 68% of the cases have shown a decrease in tumor size greater than 25%.

However, the main disadvantages of the drug are resistance (total or partial) and persistent digestive intolerance; being the postural hypotension the most serious side effect.[4]

For microprolactinomas, bromocriptine is effective in 80-90% of cases to normalize PRL levels, restore gonadal function and decrease the tumor mass. For macroprolactinomas, effectiveness is 70%, visual field defects, and headache improve in most patients.[5] The normalization of PRL levels with bromocriptine is also associated with an increase in mineral density bone in women and men.[6]

In men is considered that these effects are due to the rapid absorption of bromocriptine, which is administered 2 to 3 times a day, achieving high blood levels.[6,7]

The long half-life of cabergoline allows maintaining a stable plasma concentration, which decreases the appearance of adverse effects.[7,8] The most frequent adverse effects are nausea and vomiting (35%), followed by headaches (30%), dizziness and vertigo (25%). Less common are diarrhea, confusion, drowsiness, paresthesia, and dyspepsia. Only in 3% of patients is it necessary to stop treatment due to intolerance to Cabergoline.[8]

Pergolide or pergolide is a semisynthetic ergot derivative with agonist properties in the dopamine D1 and D2 receptors. It is approximately 100 times more potent than bromocriptine and suppresses PRL secretion up to 24 hours after a single dose, allowing effective control over PRL secretion with a single daily dose.[4]

Comparative studies with bromocriptine demonstrate an effect similar to this one, however with fewer side effects from quinagolide. Regarding cabergoline, its efficacy is similar in terms of restoring sexual and gonadal function as well as diminishing tumor size.[9-10]

Surgery is typically indicated for patients who are resistant to medical therapy or intolerant of its adverse side effects, or are experiencing progressive tumor growth. Stereotactic radiosurgery is an option for those refractory tumors.[11]

3. Conclusion:

The treatment for prolactinomas, whether microadenomas or macroadenomas have a good response to treatment. The most commonly used dopamine agonists are Bromocriptine and Cabergoline, which have a great effect on the reduction of tumor size and the inhibition of prolactin secretion.

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