

BEZOLD JARISCH REFLEX DURING HALO-GRAVITY TRACTION: CASE REPORT

REFLEXO DE BEZOLD JARISCH DURANTE TRAÇÃO HALO-CRANIANA: RELATO DE CASO

REFLEJO DE BEZOLD JARISCH DURANTE TRACCIÓN HALO-CRANEAL: CASO CLÍNICO

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ABSTRACT

Halo-gravity traction is an option that can be used in the treatment of severe spinal deformities. The author reports a complication not yet described in the literature in which rapid correction of the deformity triggered the Bezold Jarisch reflex. **Level of evidence IV; Case Series.**

Keywords: Scoliosis; Traction; Complications.

RESUMO

A tração halo-craniana é uma opção que pode ser utilizada no tratamento de deformidades severas da coluna vertebral. O autor relata uma complicação, ainda não descrita na literatura, em que a rápida correção da deformidade desencadeou o reflexo de Bezold Jarish. **Nível de evidência IV; Série de Casos.**

Descritores: Escoliose; Tração; Complicações.

RESUMEN

La tracción halo-craneal es una opción que puede ser usada para el tratamiento de deformidades severas de columna vertebral. El autor relata una complicación, aún no descrita en la literatura, en que la rápida corrección de la deformidad desencadenó el reflejo de Bezold Jarish. **Nivel de evidencia IV; Serie de Casos.**

Descriptores: Escoliosis; Tracción; Complicaciones

INTRODUCTION

The surgical treatment of severe, high-angle-value spinal deformities is particularly challenging due to difficulties intrinsic to their correction and the risk of neurological injury. Preoperative traction methods have been described to enable gradual correction of the deformities, reducing the complications of an acute correction procedure.¹ Although there are no criteria defined for its indication, its use is considered in curves greater than 100°. ²

Prior anterior release has the advantage of increasing spinal flexibility, optimizing traction effectiveness, creating greater bone surface for consolidation, and improving the final correction,³ although there is no consensus around its necessity.⁴

Studies report variations in terms of traction time, but considering that little correction is obtained after a two- to three-week period, using it beyond this timeframe seems unnecessary.⁵ There are also differences in the daily traction weight increase, ranging from 0.5kg⁶ to 3kg.⁷

Since Stagnara⁸ described the technique, various complications have been described, among them the occurrence of superficial infection and/or loosening of the pins. Transient neurologic deficit, and changes in cranial nerves are rare, but have been reported in several cases.⁹ Occasional cases of epidural abscess, mesenteric artery syndrome, and osteonecrosis of the odontoid process have also been described.³

Several protocols were established aiming to prevent complications. The limit of 50% of the body weight described by Wilkens¹⁰ is

followed in almost all studies, as is a periodic neurological examination.¹¹ There are also authors that defend the reduction of the load at night.¹²

The author describes a case of the Bezold-Jarisch reflex during halo-gravity traction, as yet not mentioned in the literature.

CASE REPORT

Patient J.F., 12 years of age, 40 kg, with juvenile idiopathic scoliosis, with a thoracic curve of 162°, (Figure 1) underwent anterior release followed by the installation of halo-gravity traction, starting at 2 kg and with a planned 2 kg per day increase, as tolerated by the patient, until reaching 50% of her weight.

On the seventh day, when the curve had already corrected to 100° (Figure 2) and just hours after having added 2 kg for a total of 14 kg, the patient presented hypotension and severe bradycardia followed by asystole and was promptly submitted to cardiopulmonary resuscitation, orotracheal intubation, and suspension of halo-gravity traction.

This was followed by a clinical investigation in which neurological and metabolic causes, embolism, and drug reactions were ruled out.

After 72 hours, the patient stabilized clinically and progressive halo-gravity traction was restarted until reaching a weight of 12 kg, at which point she was submitted to posterior approach scoliosis correction surgery as initially planned.

Study conducted at the Hospital do Rocio, Campo Largo, PR, Brazil.

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Figure 1. Juvenile idiopathic scoliosis with a thoracic curve of 162°.

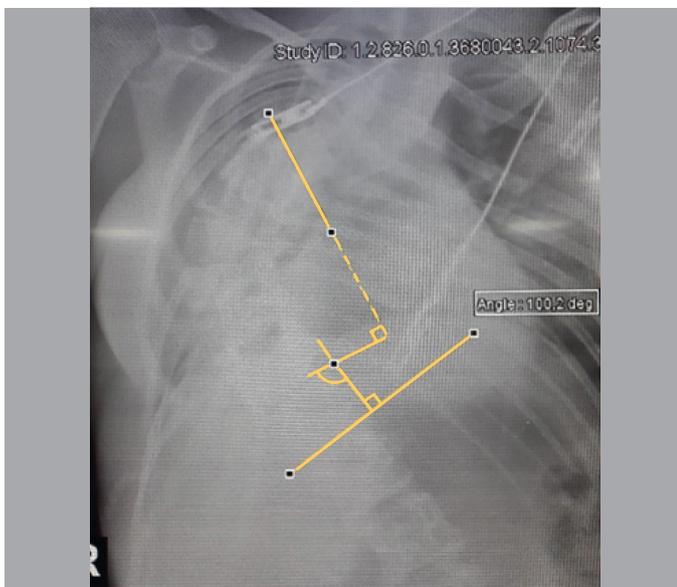


Figure 2. Juvenile idiopathic scoliosis, with curve corrected to 100°.

DISCUSSION

Although there are many articles about the treatment of severe scoliosis, there is a scarcity of case studies of extreme deformities with a Cobb angle greater than 150°, there being only one case series described¹³ that emphasizes the pulmonary compromise and the difficulties of surgical correction, which ideally should be to 70°.

The technique with the greatest corrective force is the halo-femoral technique, but this has a higher complication rate and is not well tolerated by children.¹⁴ Therefore, the option of anterior release followed by halo-gravity traction and posterior fixation¹⁵ probably allows better correction with relative safety, and was chosen by the author for this case.

The Bezold-Jarisch reflex, characterized by bradycardia and hypotension, results from stimulation of the cardiopulmonary mechanoreceptors that are connected to afferent unmyelinated fibers of the vagus nerve that lead to the solitary nucleus of the brainstem.¹⁶ Hypovolemia, rapid volume redistribution, parasympathetic activation, intense pain, and panic are included among the causes described.¹⁷

Although it is not possible to state physiopathologically how the halo-gravity traction triggered the reflex, it has been reported that the stretching of the dura mater could be a causative agent.¹⁸

The prognosis depends mainly on the time it takes to treat it, with full recovery in cases where there is rapid intervention, but with risk of brain injury or death in other cases.¹⁹

According to the author's research, there is only one similar case,²⁰ in which the patient, with a history of multiple posterior approach osteotomies, presented bradycardia and hemodynamic instability after one day of traction, the cause of which was not identified.

In the reported case, with extremely severe scoliosis, the 2 kg daily weight increase combined with the previous anterior thoracic release, produced a large correction of around 60° in the short time of a week, which the author believes was responsible for triggering the reflex.

In addition to being unique, the case presented is also the most serious complication described during halo-gravity traction, putting the patient's life directly at risk. Thus, the author recommends moderation in the pace of the correction, as well as constant monitoring of vital signs during the procedure.

CONCLUSION

During halo-gravity traction, a large correction within a short period of time may trigger the Bezold-Jarisch reflex.

The author declare no potential conflict of interest related to this article.

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