Neuro-Cranio-vertebral syndrome related to coccygeal dislocation: a preliminary study

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Introduction

Neuro-Cranio-vertebral syndrome (NCVS) includes a set of idiopathic diseases: Arnold-Chiari syndrome type 0, 1 and 1.5, idiopathic scoliosis, and idiopathic syringomyelia. It is caused by the pathological traction transmitted by the filum terminale on the neuraxis. Considering that **the filum terminale is inserted at sacrococcygeal level**, it is logical to think that an alteration of this segment's anatomy, such as **an anterior coccyx dislocation, can increase the tension exerted by the filum terminale on the neuraxis**, which in turn triggers NCVS.

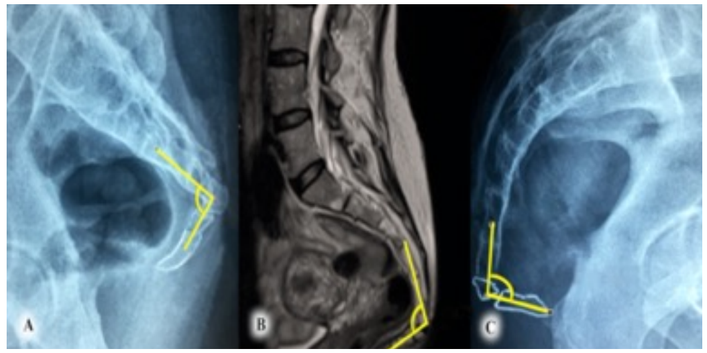

Figure 1. Intercoccygeal angle in three different cases: (A) Case 14, with an angle of 92.3º, (B) Case 10, with an angle of 104.2º, (C) Case 11, with an angle of 103.3º.

Methods

- We collected data **from 372 patients with NCVS and 15 patients with coccygeal dislocation (CD) and NCVS** from our database. - Comparison of the most common **symptoms (Fig.2), signs (Fig.3)** in both samples.
- Thoracolumbar scoliosis was the most common spinal deviation in the CD group **(Fig.4).**

Results

Symptoms, signs, and imaging features were present in similar proportions, 65% in both samples. There was a similar prevalence of cerebellar tonsillar descent and scoliosis in both groups, whereas the incidence of syringomyelia differed. A sacrococcygeal angle between 89-110º prevails in cases of syringomyelia while an intercoccygeal angle between 90-140º prevails in cases with cerebellar tonsillar descent (**Fig.1**).

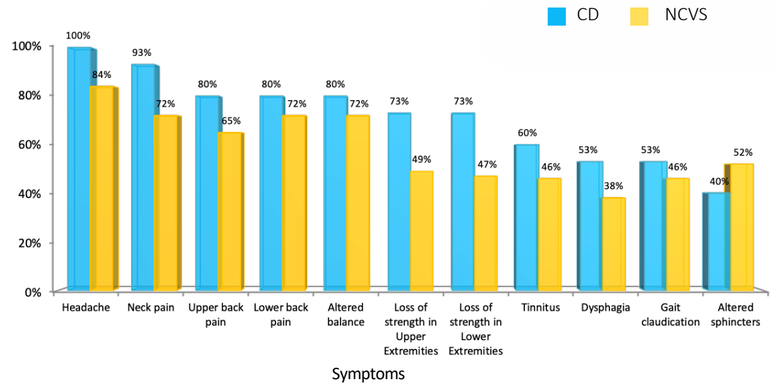

Figure 2. Comparison of the most common symptoms in both samples, in blue the 15 cases with coccygeal dislocation and in yellow the 372 cases with NCVS.

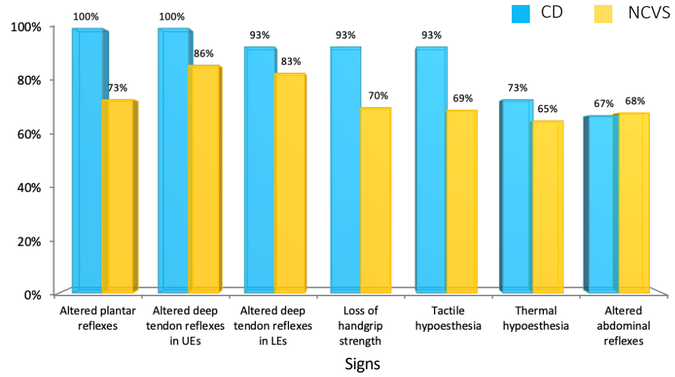

Figure 3. Comparison of the most common signs in both samples. In blue the 15 cases with coccygeal dislocation and in yellow the 372 cases with NCVS.

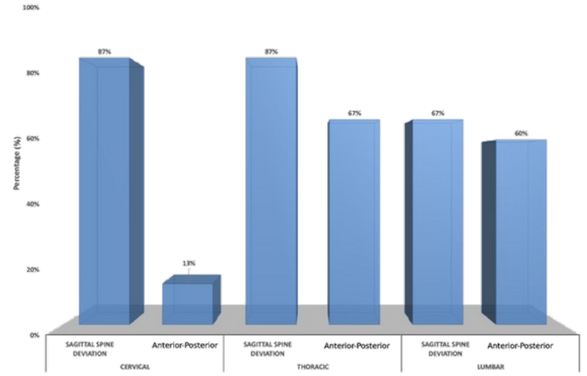

Figure 4. Spine deviation in 15 cases with CD

Conclusion

The frequent finding of anterior coccygeal dislocation in patients with NCVS syndrome suggests an association between them. Its mechanism can directly influence the development of NCVS (Fig.5).

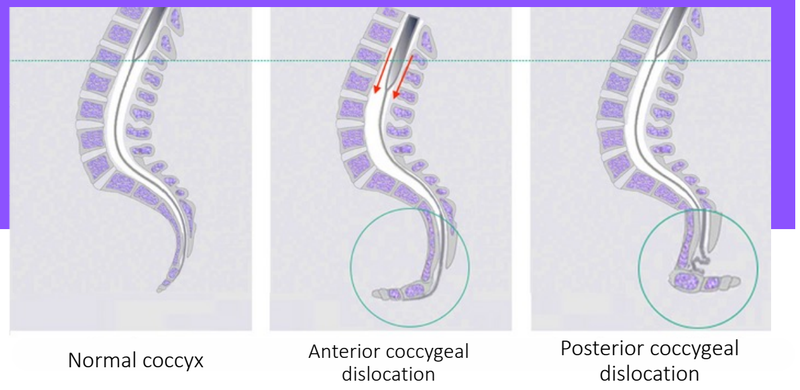

Figure 5. Effect of coccygeal displacement on the filum terminale and dural sac: normal filum terminale (left), increased tension in anterior dislocation (centre) and reduced tension in posterior dislocation (right).

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