



Bilateral Abducens Nerve Palsy Secondary to Intracranial Sinuses Thrombosis in a Child with Nephrotic Syndrome: A Case Report

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Abstract

We report herein a case of a child with nephrotic syndrome (NS) who presented with acute convergent strabismus, double vision, and papilledema one week after a history of badly treated sinusitis. The imaging study revealed an extensive thrombosis of the intracranial sinuses that was treated with intravenous heparin and oral corticosteroids. Four months later, the case evolved with spontaneous resolution of ocular deviation and diplopia.

Keywords: Bilateral abducent nerve palsy; Papilledema; Intracranial Hypertension; Intracranial sinuses thrombosis.

Introduction

The abducent nerve is the most affected cranial pair in cases of acquired paralytic strabismus¹. Bilateral involvement is more common in children, and one important etiology to be considered is the increase of intracranial pressure, which can be idiopathic or secondary to many disorders, such as neoplasia, cerebral venous thrombosis, drugs, endocrine abnormalities and infectious causes².

Commonly, the main complaint that leads to a medical visit is diplopia, caused by ocular deviation.

When acquired abducent nerve palsy is present, especially when associated with chronic comorbidities or other neurological findings, a complete clinical investigation, with laboratory studies, image exams and multidisciplinary evaluation must be performed.

In patients with NS, cerebral venous sinus thrombosis is a rare complication, with a few cases described in the literature. Although this probably represents

an underestimated incidence, once many cases are asymptomatic or not diagnosed in time³.

A variety of treatments for ophthalmologic clinical features secondary to intracranial sinuses thrombosis is available, such as relief occlusion, prism, botulin toxin and surgery. Nevertheless, spontaneous resolution of the case can occur in many patients.

Case Report

MVSS, 6 years old, male, student, presented with convergent strabismus and diplopia one week after a history of fever, followed by erythema and edema around left eye. He was initially treated with intravenous ceftriaxone, without any improvement, and then admitted to the hospital where the medication was changed to intravenous oxacillin, with improvement of fever, edema and erythema. He had a past medical history of nephrotic syndrome.

On examination best corrected visual acuity was 20/40 in each eye, biomicroscopy and bidigital tonometry were normal. Ocular motility examination showed an esotropia of 45 prism diopters (PD) in the primary position and bilateral limitation of abduction of -3 in the right eye (OD) and -1.5 in the left eye (OS) (*Figure 1*).

The Fundus examination showed papilledema (*Figure 2*).

Magnetic resonance imaging (MRI) revealed an extensive acute and subacute venous thrombosis of the superficial and deep nervous system, affecting the superior sagittal, thoracic, transverse and right jugular sinuses, sinus rectus to the beginning of the galena vein. Enlargement of the subarachnoid space adjacent to the optic nerves could be seen, suggesting intracranial hypertension (*Figure 3*).



Figure 1: Esotropia of 45 prism diopters and bilateral limitation of abduction.

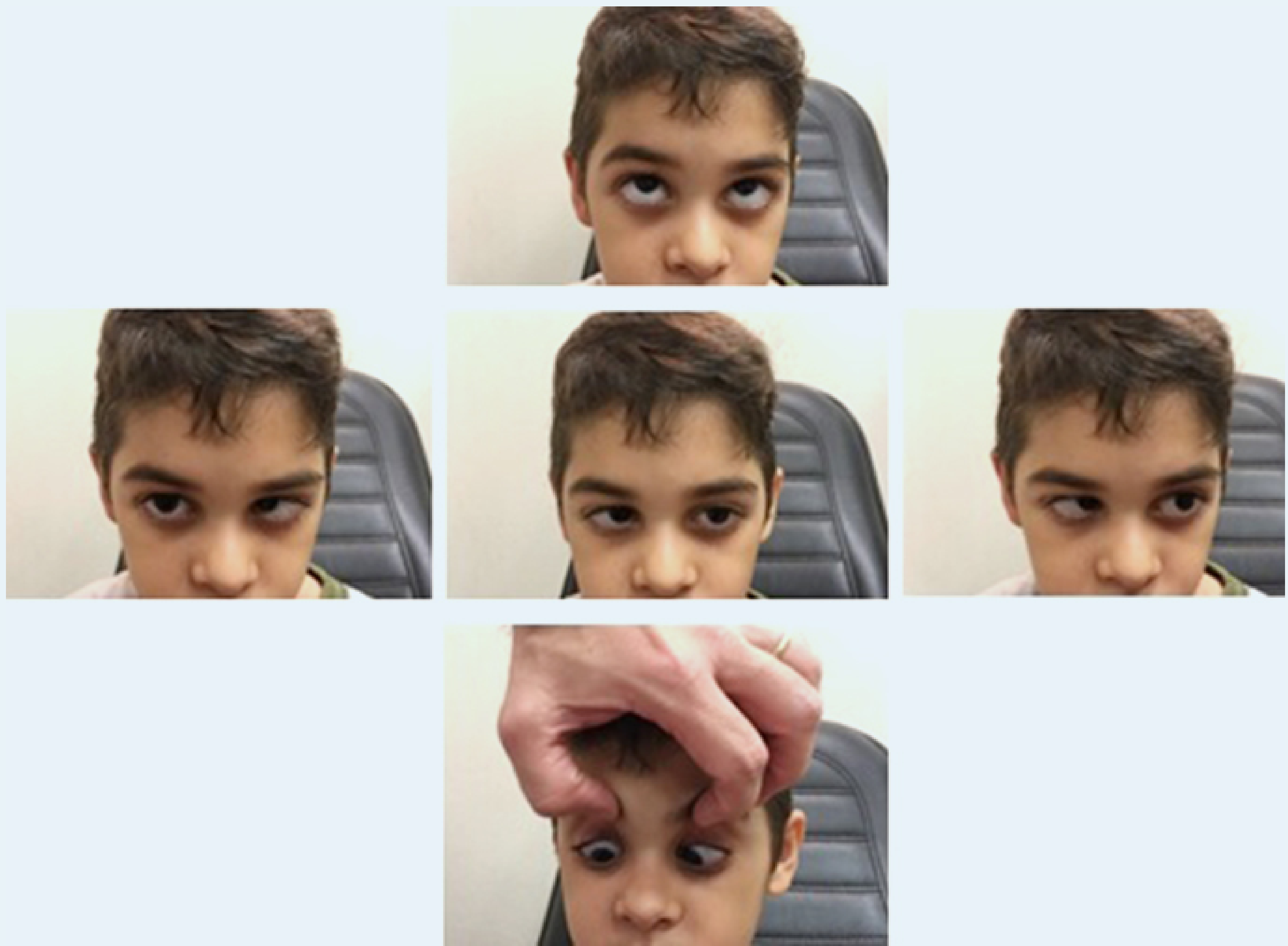
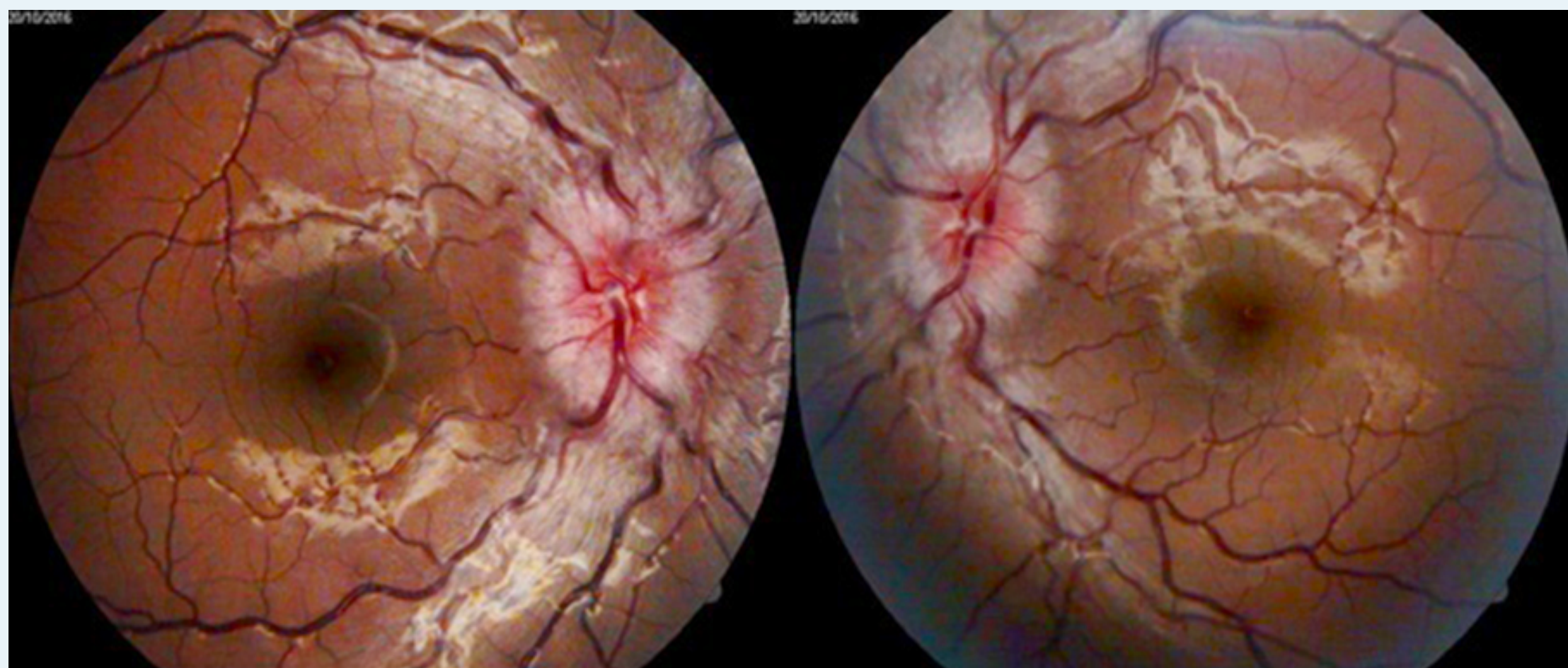


Figure 2: Papilledema



The laboratory studies showed a normal hematologic profile. He was treated with oral prednisolone and anticoagulation (Clexane and Warfarin). One month later, he evolved with clinical improvement, presenting with esotropia of 20 PD and limitation of abduction of -1 in the OD. After four months of clinical ophthalmologic follow up he presented an esotropia of 6 PD and normal ductions, without diplopia (*Figure 4*).

Discussion

Isolated acute acquired ocular deviation in children over 7 years old, when visual maturity is complete, requires a special attention, with complete systemic investigation and image exams to exclude neurological causes. Common forms of childhood esotropia, as infantile esotropia and accommodative esotropia, differs in timing of onset and evolution⁴.



Figure 3: Extensive venous thrombosis of the superior sagittal, thoracic, transverse and right jugular sinuses, sinus rectus to the beginning of the galena vein. The magnetic resonance imaging also shows an enlargement of the subarachnoid space adjacent to the optic nerves.

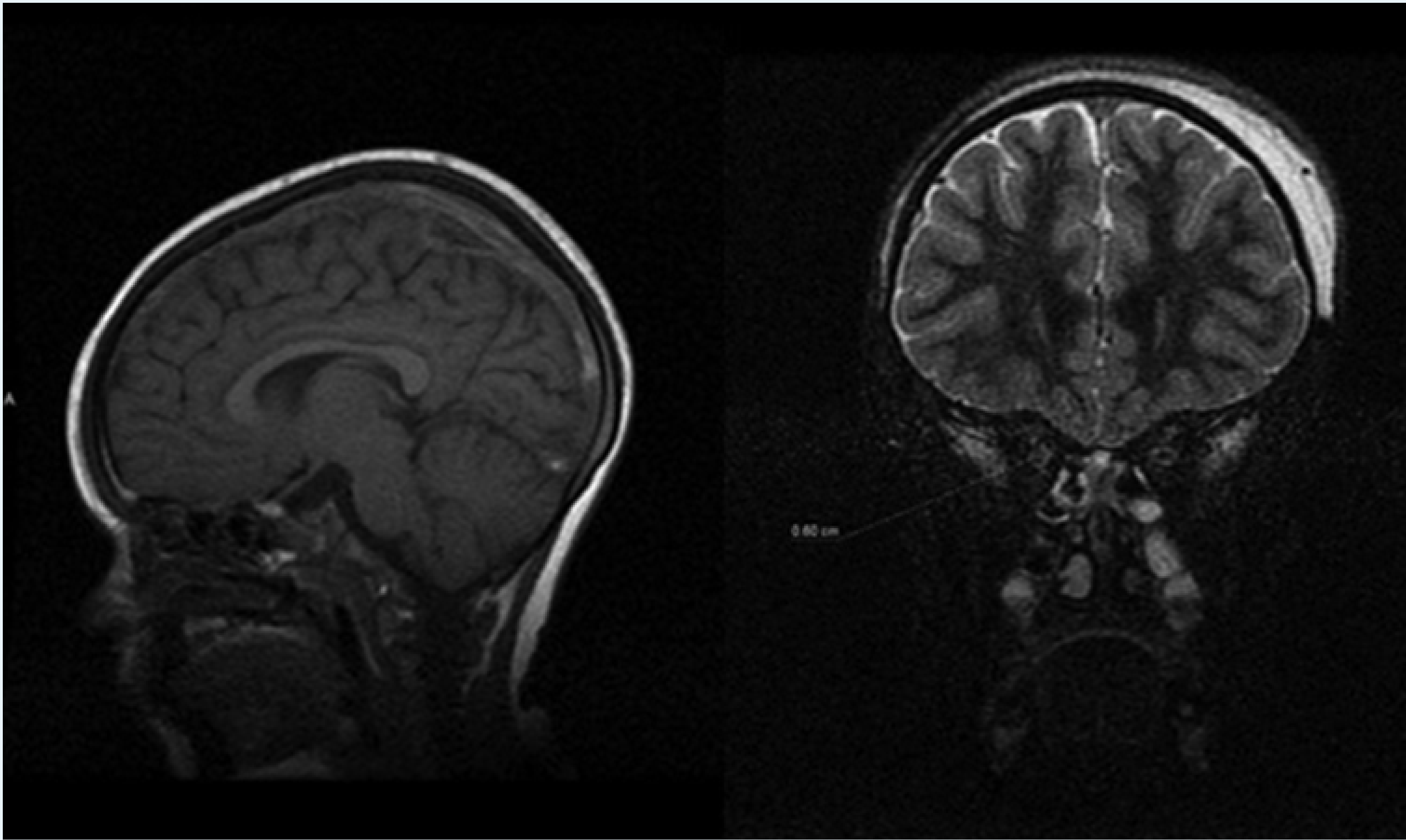
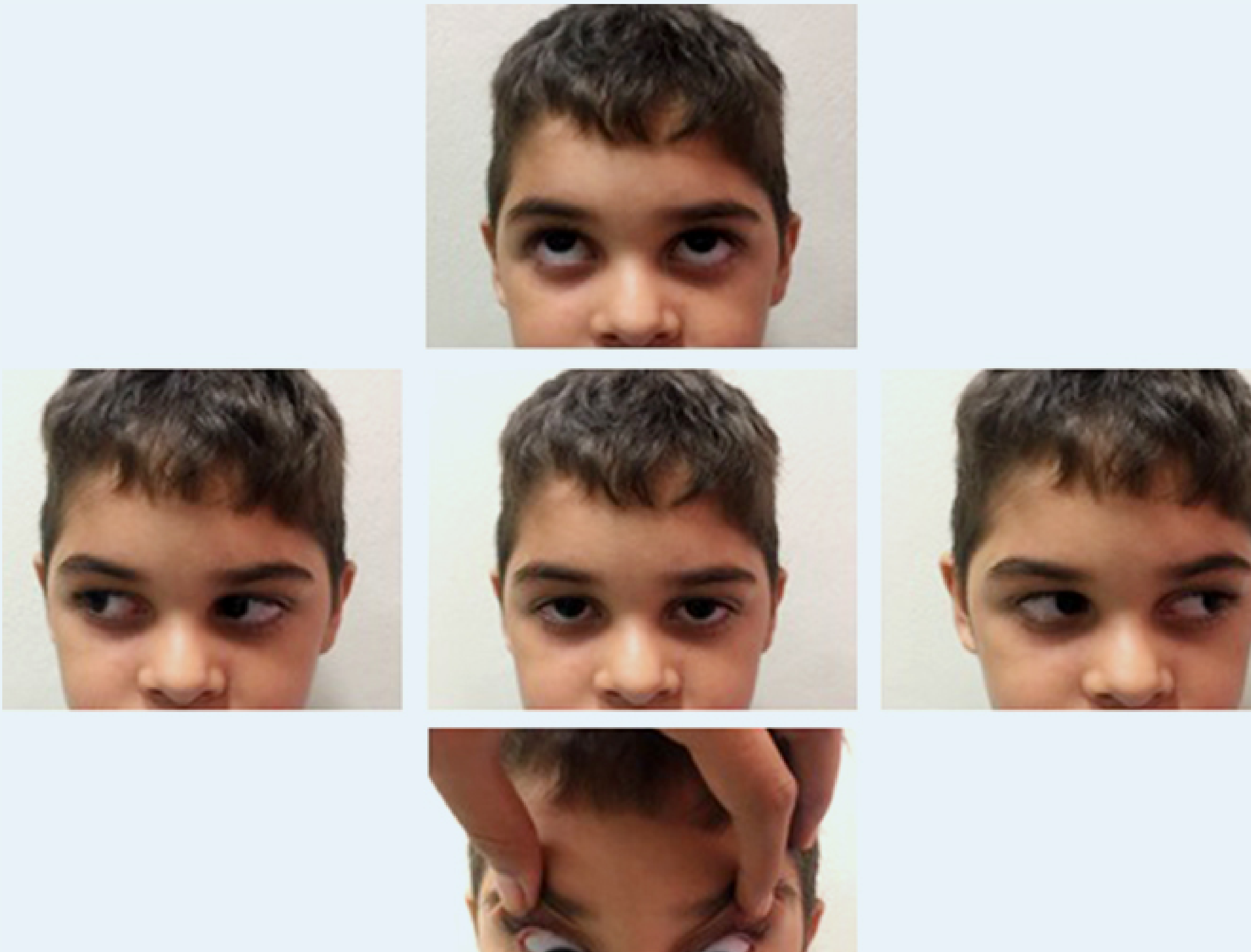


Figure 4: After 4 months of the initial event, presenting an ocular deviation of 6 diopters and normal ductions.





The nephrotic syndrome is a disease with several possible complications, of which arterial and venous thrombosis are frequent and well documented. However, intracranial venous thrombosis is very rare, being rarer in children than in adults⁵. Although the risk of thrombotic events is lower in children, the potential of severity is higher, according to the literature⁶.

Clinical presentation can vary, including severe manifestations as hemiparesis, vomiting, seizures, headache, unconsciousness, drowsiness and convulsions, but isolated abducens nerve palsy as the only focal neurologic deficit is very uncommon, with very few cases reported in the literature^{7,8}. Papilloedema is often an associated finding.

MRI is the preferred image exam used for diagnosis and follow up of cerebral venous thrombosis, because it is noninvasive and presents high sensitivity⁹. The complete resolution of ocular deviation is not unusual, but earlier suspicion, investigation and treatment of neurological causes can provide a better prognosis. Treatment of abducens palsy must be directed for correction of the underlying cause. Diplopia can affect patient's life quality and occlusion of one eye, temporary prismatic correction placed on spectacles or the use of botulinum toxin can provide relief of symptoms. If eyes misalignment persists after several months, there are many surgical options¹⁰.

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