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Case Series

Case Series: Diverse Causes of Vision Loss and Cranial Neuropathies in Young Females – A Diagnostic Challenge

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Abstract:

Background: Vision loss and cranial nerve palsies in young individuals can have a broad differential diagnosis, ranging from infectious to autoimmune and inflammatory conditions. Recognizing patterns and timely investigations are crucial for appropriate management.

Objective: To present a series of five cases with acute or subacute visual symptoms and cranial nerve involvement with varied etiologies including infectious, inflammatory, autoimmune, and idiopathic causes.

Methods: Retrospective observational series of five young female patients presenting to a neurology department over 1 year with visual complaints and/or cranial nerve involvement. Clinical evaluation, neuroimaging, CSF analysis, and serological workup were done.

Results: Etiologies included HHV6-associated cavernous sinus thrombosis, presumed tubercular pituitary hypophysitis, multiple sclerosis, Tolosa-Hunt syndrome, and neuroretinitis. All patients responded well to targeted therapy based on etiology.

Conclusion: A systematic approach integrating neuroimaging and CSF analysis aids in early diagnosis and tailored treatment in cases of cranial neuropathies with vision loss.

Keywords: Vision loss, Cavernous sinus thrombosis, Multiple sclerosis, Tolosa-Hunt syndrome, Neuroretinitis, Optic neuritis.

Introduction

Cranial neuropathies and vision loss are frequently encountered in neurological practice. The differential diagnosis is wide-ranging and includes infectious, inflammatory, autoimmune, neoplastic, and idiopathic causes.

Early diagnosis is crucial for initiating appropriate therapy and preventing permanent visual impairment. This case series highlights five female patients presenting with varied forms of cranial neuropathies and vision loss, demonstrating the importance of a comprehensive diagnostic workup.

Case Presentations

Case 1

A 40-year-old female presented with a vesicular rash over the left lower lip followed by bilateral facial swelling, diminished vision, and drooping of the left eyelid for 15 days.

Neurological examination revealed left complete ophthalmoplegia with dilated pupil involving cranial nerves II, III, IV, VI, and decreased V1-V2 sensation. Routine blood investigations and CSF morphology were normal. MRI revealed left-sided cavernous sinus thrombosis. CSF BioFire panel revealed HHV6 infection. The patient was treated with antiviral therapy and improved dramatically.

Case 2

A 36-year-old female presented with insidious, severe headache followed by blurring and diminution of vision, more in the left eye. She had bitemporal hemianopia. CSF and biochemical parameters were normal.

MRI showed dural enhancement involving the pituitary gland and perineuritis. Infective and autoimmune workup including IgG4 was negative. ESR was elevated and Mantoux was positive. Empirical anti-tubercular therapy with steroids was started with significant improvement.

Case 3

A 38-year-old female had left-sided migrainous headache followed by complete vision loss in the same eye over 3 months. Examination revealed left RAPD and pale optic disc. MRI brain, orbit, and

spine were normal. CSF showed raised IgG index and oligoclonal bands. She had a history of similar vision loss 2 years prior with spontaneous recovery. Diagnosed with relapsing multiple sclerosis and started on steroids and dimethyl fumarate. The patient improved significantly.

Case 4

A 47-year-old female presented with headache, acute vision diminution, diplopia, and ptosis without blurring.

Examination revealed complete ophthalmoparesis without pupillary involvement. Fundus was normal. MRI showed meningeal enhancement around the cavernous sinus. CSF, biochemistry, VEP, and autoimmune panels were unremarkable. A provisional diagnosis of Tolosa-Hunt syndrome was made. She responded well to steroids.

Case 5

A 26-year-old newly married female presented with right-sided acute headache and vision loss.

She had diminished color vision and central-peripheral scotomas. MRI revealed right perioptic neuritis. Workup including CSF and autoimmune markers was negative. OCT showed neuroretinitis. She was empirically treated with doxycycline and improved within 2 weeks.

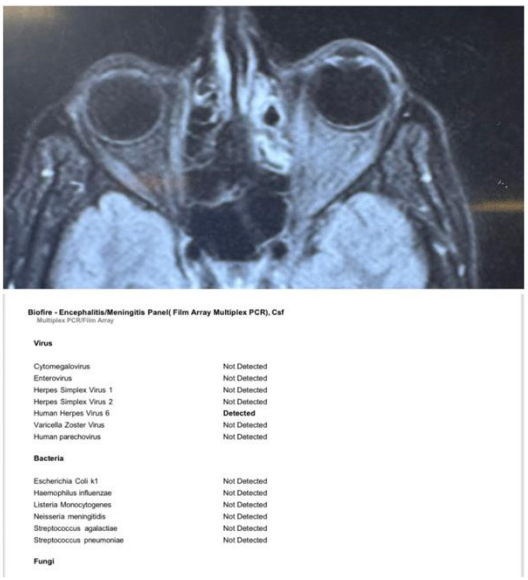
Discussion

This case series illustrates the diagnostic complexity in patients presenting with vision loss and cranial nerve palsies. Infectious etiologies such as HHV6 can lead to cavernous sinus thrombosis, while neurotuberculosis remains an important cause of pituitary and meningeal inflammation in endemic regions.

Multiple sclerosis can present with optic neuritis as an isolated or recurrent event and requires CSF analysis for diagnosis. Tolosa-Hunt syndrome is a diagnosis of exclusion characterized by painful ophthalmoplegia with excellent steroid responsiveness. Neuroretinitis is an uncommon but treatable condition often responding to doxycycline. Timely recognition of patterns and utilization of imaging and CSF studies facilitated appropriate diagnosis and treatment.

Conclusion

In young females presenting with acute or subacute visual symptoms and cranial nerve involvement, diverse etiologies should be considered. This case series emphasizes the importance of systematic evaluation using neuroimaging, CSF analysis, and targeted testing. Early diagnosis and specific treatment resulted in favorable outcomes in all cases.



Biofire - Encephalitis/Meningitis Panel(Film Array Multiplex PCR), Csf

Multiplex PCR/Film Array

Virus	
Cytomegalovirus	Not Detected
Enterovirus	Not Detected
Herpes Simplex Virus 1	Not Detected
Herpes Simplex Virus 2	Not Detected
Human Herpes Virus 6	**Detected**
Varicella Zoster Virus	Not Detected
Human parechovirus	Not Detected
Bacteria	
Escherichia Coli k1	Not Detected
Haemophilus influenzae	Not Detected
Listeria Monocytogenes	Not Detected
Neisseria meningitidis	Not Detected
Streptococcus agalactiae	Not Detected
Streptococcus pneumoniae	Not Detected
Fungi	

Figure 1: MRI showing Extensive Left optic nerve involve with cavernous sinus thrombosis with HH6 positivity.

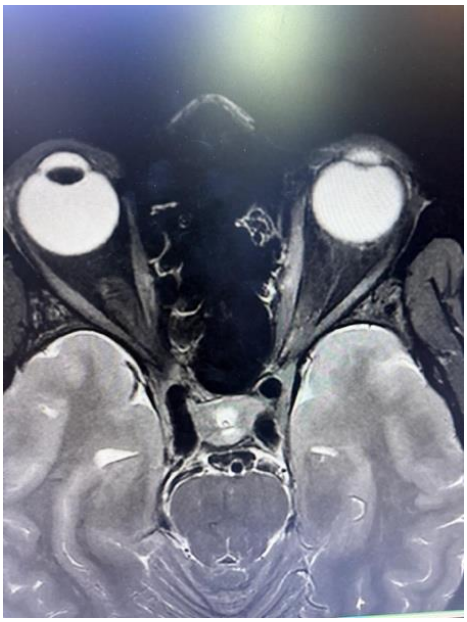


Figure 2: MRI showing peri optic neuritis with dural enhancement.

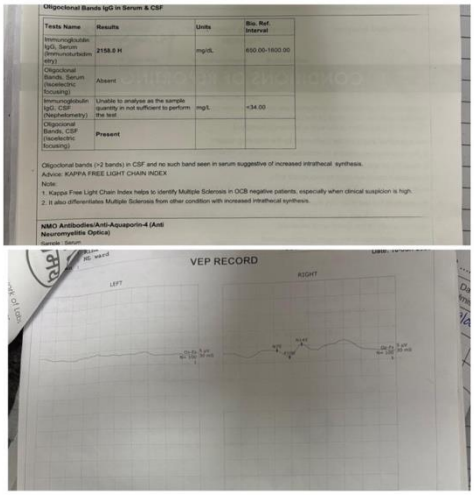


Figure 3: showing OCB positivity and VEP

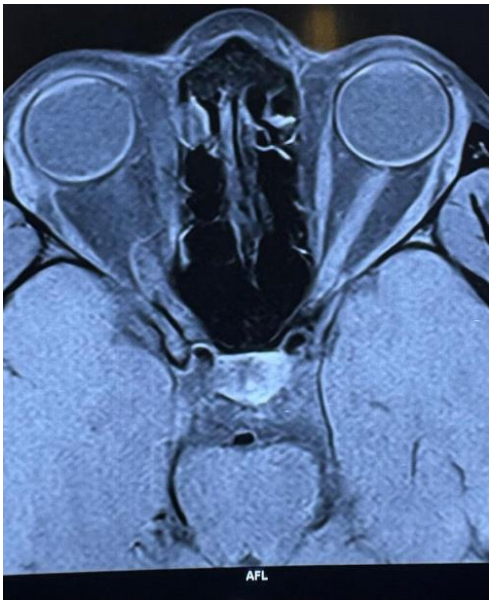


Figure 4: meningeal enhancement alongside of cavernous sinus.

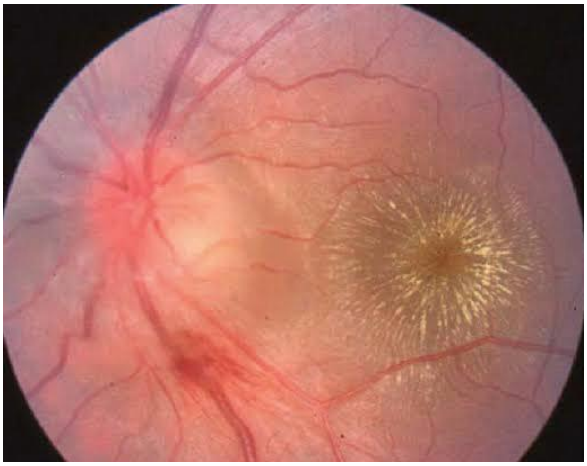


Figure 5: Fundus showing Neuroretinitis

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