Chronic Progressive External Ophthalmoplegia
S Arya, A Malik, S Gupta, H Gupta, R Mittal, S Sood

Citation

Abstract
Introduction: Kearns Sayre syndrome is a rare form of mitochondrial myopathy. We report a case of an 18 year old male who had chronic progressive external ophthalmoplegia diagnosed as Kearns – Sayre syndrome.

Case Report: An 18 year old male presented with gradually progressive drooping of both upper lids since three years, associated with limited movements of eyeball in all directions. Window defects were seen on fundus fluorescein angiography. Electromyography showed defibrillation and decreased amplitude in favor of myopathy. Audiometry showed evidence of bilateral sensorineural deafness at higher frequencies. Biopsy of orbicularis oculi showed muscle fibers of varying size, some of which were normal in size with evident cross striations while others were atrophied and degenerated and showed intense eosinophilia in Massons trichome stain suggesting the diagnosis of chronic progressive external ophthalmoplegia with Kearns- Sayre syndrome.

Conclusion: Kearns-Sayre Syndrome is a form of mitochondrial myopathy. Regular followup is required to detect if there is development of cardiac conduction defects. Ocular examination and cardiac screening of family members is recommended.

INTRODUCTION
Mitochondrial myopathies presenting as chronic progressive external ophthalmoplegia (CPEO) are Kearns-Sayre syndrome (KSS), isolated ocular form, oculofacial syndrome. Kearns-Sayre syndrome is a rare disorder. We report a case of an 18 year old male who had CPEO diagnosed as Kearns – Sayre syndrome.

CASE REPORT
An 18 year old male presented to us with chief complaints of gradually progressive drooping of both upper lids since three years associated with limited eye movements in both eyes (Figure 1).

Figure 1
Figure 1: Clinical Photograph of the patient showing bilateral severe Ptosis

There was no history of diplopia or pain. There was no history of remissions or fluctuations, fatigability, trauma. There was no history of change in speech, hearing loss. His patients were non-consanguineous. His built was normal to his age. On examination secondary sexual characters were well developed.
Examination of central nervous system and cardiovascular examination did not reveal any abnormality. On ocular examination visual acuity was 6/12 in the right eye 6/9 in the left eye. Lid crease was absent in both the eyes. Amount of ptosis was 4mm on both sides. Ocular movements were absent in all the gazes. Bell's and Marcus-Gunn phenomenon were absent. Pupillary reactions, both direct and consensual were present and brisk. Rest of the anterior and posterior segment examination was normal. Fundus examination did not reveal any retinal pigmentary abnormality. But on fundus fluorescein angiography window defects were seen. Perimetry was normal. All the systemic investigations including serum creatine, phosphokinase, liver function tests, lactate/pyruvic acid levels, serum calcium, sodium, potassium, random blood sugar, were unremarkable. Electrocardiography and echocardiography were normal. Electromyography showed defibrillation and decreased amplitude in favor of myopathy. Audiometry showed evidence of bilateral sensorineural deafness at higher frequencies. There was no enlargement of muscle or evidence of any mass lesion on CT orbit. MRI Head was normal. Biopsy of orbicularis oculi showed muscle fibers of varying size, some of which were normal in size with evident cross striations while others were atrophied and degenerated and showed intense eosinophilia in Massons trihome stain (Figure 2A and 2B).

**Figure 2**
Figure 2A: Section showing muscle fibers of varying size, with evident cross striations while others were atrophied and degenerated (H&E, 100X).

With all these findings a diagnosis of chronic progressive external ophthalmoplegia was made. We started the patient on multivitamins. At six months follow-up there was no improvement in ocular movements.

**DISCUSSION**
Kearns-Sayre Syndrome is a form of mitochondrial myopathy. It is defined by triad of clinical findings: onset before age 20, CPEO, pigmentary retinopathy plus any one of following: complete heart block, CSF protein>1.0g/l, cerebellar ataxia. Some patients may not fulfill all the criteria for KSS. Our patient had age of onset < 20 years, external ophthalmoplegia and ptosis, retinal pigmentary changes on FFA. Kearns-Sayre syndrome is a rare disorder. It is a sporadic disease in which there is M/C deletion removes bp 4977 of mtDNA. Mutations are also reported. At the onset of the disease no clinical, morphologic or molecular features can predict whether CPEO will remain isolated or become part of multisystem disease. Ophthalmoplegia is usually symmetric. Pigmentary retinopathy confines to the post pole with a mottled appearance of retinal pigment. Other cardinal systemic manifestations are cardiac conduction defects, elevated CSF protein, abnormal muscle mitochondria, and spongiform encephalopathy.

Associated manifestations are short stature, deafness, cerebellar ataxia, mild corticospinal signs, descending myopathy of face and limbs, subnormal intelligence, slowed EEG, aseptic meningitis (by history), demyelinating...
radiculopathy, hyperglycemic acidotic coma. Endocrinological sings include Diabetes Mellitus (13%), hypogonadism, Growth Hormone deficiency, adrenal dysfunction, hyporarathyroidism, and skeletal and dental anomalies. Risk of recurrence among the offspring of affected women was 4.11%. Affected mothers on an average have a risk of about 1 in 24 births. In a study in 21 patients MRI abnormalities were found in 20 patients. Most frequent abnormalities were widespread white matter hyperintensity in 19 patients, supratentorial cortical atrophy in 13 patients. Absence of basal ganglia hyperintensity was correlated with Kearns-Sayre Syndrome. Most common MRI finding reported in Kearns-Sayre Syndrome is supratentorial and infratentorial atrophy. Early EMG and muscle biopsy examination facilitate early diagnosis. Death is mostly attributed to heart block. Sudden death is also reported with this disease. Treatment tried is Ubidecarenone or coenzyme Q10 has been noted to be deficiency. This coenzyme is essential for normal mitochondrial respiration. Treatment with coenzyme Q10 of patients with mitochondrial cytopathies has resulted in improved pyruvate metabolism, cardiac function, exercise intolerance, CSF levels and ataxia but no effect on ophthalmoplegia, ptosis or retinopathy. Regular follow up is required to pick up if there is development of cardiac conduction defects. Ocular examination and cardiologic screening of family members is recommended.

CORRESPONDENCE TO

Archana Malik Senior Resident, Department of Ophthalmology Government Medical College & Hospital, Sector 32, Chandigarh E-mail- drarchanag2002@yahoo.com Ph-091-172-2607707, Fax- 091-172-2607707

References

Author Information

Sudesh Kumar Arya, MD
Professor, Department of Ophthalmology, Government Medical College & Hospital

Archana Malik, MS
Senior Resident, Department of Ophthalmology, Government Medical College & Hospital

Sonika Gupta, MS
Senior Lecturer, Department of Ophthalmology, Government Medical College & Hospital

Hemlata Gupta, MS
Senior Resident, Department of Ophthalmology, Government Medical College & Hospital

Romilla Mittal, MD
Senior Resident, Department of Pathology, Government Medical College & Hospital

Sunandan Sood, MS
Professor, Department of Ophthalmology, Government Medical College & Hospital