VIDEO CASE SOLUTION

# Diagnosis: Kennedy Disease

Last month's case presented a 42-year-old man who showed atrophy and fasciculations of the tongue, abnormal facial movements, and large breasts.

**BY AZIZ SHAIBANI, MD**

A 42-year-old Mexican man noticed painless and socially embarrassing facial twitching during times of stress since age 20 years. A few years later he noticed mild slurring of speech. His examination showed atrophy and fasciculations of the tongue, abnormal facial movements, and large breasts. Genetic testing was diagnostic.

**DIAGNOSIS:** Kennedy disease (X-linked bulbospinal muscular atrophy)

It is an X-linked recessive disease caused by a mutation of the androgen receptor gene on Xq12.

- The mutation is in the form of CAG repeat expansion.
- Most affected people have a repeat number of 40-65 (normal range is 10-36).
- CTG repeats produce Polyglutamine tail, which leads to abnormal folding of the androgen receptors resulting in partial proteolysis. Androgen plasy a role in cells survival and dendritic growth.
- Autosomal dominant bulbospinal atrophy with gynecomastia is also reported.

Pathologically, the disease is characterized by degenration of the motor and sensory neurons. Extraocular muscles are spared, may be due to low number of androgen receptors.

Anticipation (earlier onset and more severe disease in subsequent generations) has not ben substantiated.

Age of onset: 15-60 years.

Heterozygous female may display tongue fasciculations and muscle cramps int he 7th decade.

Musce cramps, fatigue, and legs weakness are common early symtpoms.

Full blown picture:

- Proximal weakness, atrophy and fascicluations.
- Tongue weakness and fasciulations.
- Facial myokymia.
- Dysphagia, dysarthria.
- Diffuse areflexia.
- Reduced feet sensation and small sensory nerve action potentials(SNAPS).
- Action tremor.
- Gynecomastia, testicular atrophy, erectile dysfunction.
- Diabetes Mellitus.
- Needle electromyography: chronic diffuse denervation.

Mildly elevated creatine Kinase(CK).

It affects 2:100,000 of population.

Every male with muscle cramps, high CK and neurogenic EMG should be tested for Kennedy disease.

In chronic motor neuron disorders, the presence of high CK and low SNAPS whould raise the posibility of Kennedy's syndrome

Due to rarity and protean manefestations, Kennedy disease may be misdiagnosed as:

- Myopathy: due the presence of proximal symmetrical weakness,
- Muscle cramps, and elevated CK.
- Neuropathy: due to the presence of feet numbness, areflexia, and low SNAPS.
- Myasthenia gravis: due to the presence of dysphagia, dysarthria, fatigability of chewing muscles and jaw ptosis (due to trigeninal neuropathy).
- ALS: due to the presence of tongue fasciculations and wide spread denervation.

The disease is slowly progressive and is not curable.