Case Study
Glaucoma and Epidemic Dropsy - A Past Possible Association Revisited

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ABSTRACT

Epidemic dropsy is a multi-system disease involving the cardiovascular, hepatic, renal, ocular and other systems. Onset is usually subacute or insidious with watery diarrhea and vomiting. This lasts from a few days to more than a week. Bilaterally symmetrical pitting edema of the lower limbs extending from the ankles up to the scrotum and abdominal wall is a constant feature. It is a toxic disease caused by the unintentional ingestion of Argemone mexicana (prickly yellow poppy) seeds as an adulterant of wheat flour, or more commonly, of cooking oil such as mustard oil. Sanguinarine and dehydrosanguinarine are two major toxic alkaloids of Argemone oil. It is a rare phenomenon for practicing ophthalmologists to observe cases of epidemic dropsy, and the possibility of glaucoma should be kept in mind in cases of epidemic dropsy, when members of same family or village report with raised IOP, pedal edema and history of use of mustard oil for cooking or massage. Glaucoma is hypersecretory in nature; prostaglandin and histamine release may have significant roles in its pathogenesis. The disease has self limiting course but needs good control of intraocular pressure (IOP) medically till it returns to normal and visual field changes have stabilized. Its early diagnosis is very important to prevent grievous complications; hence, all cases should be followed up regularly for IOP measurement and visual field analysis up to 8-12 weeks, because, if ignored, optic atrophy may develop.

Keywords: Argemone Mexicana, Epidemic Dropsy, Glaucoma, Intraocular Pressure (IOP), Ophthalmologist

INTRODUCTION

Epidemic Dropsy is an acute toxic disease, which was recognized in 1877, when it appeared as an epidemic outbreak in Calcutta. However this drew the attention of ophthalmologists only in 1909 when Maynard reported occurrence of glaucoma in cases of epidemic dropsy. (Rathore, 1982). It occurs due to contamination of edible oil with seeds of Argemone mexicana and may also occur following massage with contaminated sanguinarine hydrochloride – an alkaloid of benzphenanthrine subgroup of iso-
quinoline group isolated from oil of *Argemone mexicana*.

Pathologically, sanguinarine hydrochloride gives rise to dilatation and engorgement of capillaries in various tissues of the body. All ages are affected and both sexes have equal predilection.

Clinical presentation include bilateral symmetrical pitting edema of lower limbs; edema extending from ankles up to the scrotum and abdominal wall is a constant feature (Sharma et al, 1999). Additionally, there maybe anemia, low grade fever, gastrointestinal disturbances, dyspnea, and cardiac failure.

Among ocular findings, glaucoma has been reported in various epidemics in 0 – 12% of cases (Mohan et al, 1984; Rathore, 1982). Glaucoma usually manifests after about 4 weeks and is always bilateral. During the early stages, field defects may be present (Sachdev et al, 1988), which, if undetected, may lead to severe visual impairment. Since the severity of glaucoma is independent of the severity of systemic features, there are no signs of anterior segment inflammation and chamber depth is usually normal. Therefore all cases suspected of epidemic dropsy should be subjected to regular eye examination. Fundus shows venous dilatation and tortuosity, hemorrhages and disc edema.

The diagnosis of epidemic dropsy must be considered during an outbreak of bilaterally symmetric edema in more than one member of a family or community, consuming mustard oil, especially when tendon jerk reflexes are well preserved; otherwise there is no laboratory parameter considered specific for epidemic dropsy.

Withdrawal of contaminated cooking oil is the most important initial therapeutic step. Bed rest with leg elevation and protein rich diet is useful. Medical treatment is advised for glaucoma till IOP returns to normal, visual fields should be monitored, otherwise filtering surgery is indicated to decrease the IOP.

**CASE REPORT 1**

A 25-year-old female patient came to the Ophthalmology OPD for routine checkup of IOP as she was a known patient of glaucoma who had received the diagnosis prior to presenting at our facilities. She was asymptomatic.

On examination, she had visual acuity 6/6 in both eyes, clear conjunctiva, clear cornea, deep anterior chambers, normal pupils, intraocular pressure was 20mm Hg in both eyes on applanation tonometry, gonioscopy revealed both eyes had open angles, OD evaluation showed a vertical C:D ratio of 0.8 with superior and inferior NRR thinning in the right eye. The results from her carotid colour doppler studies were within normal limits.

She also had a history of difficulty in breathing, gastrointestinal distress, and a mild, but constant, heaviness in both eyes. On further probing, she provided a history of use of mustard oil for many years. There was a corroborative history of mass disease of swelling of feet in her village community, hence the patient was also investigated for epidemic dropsy. After initiating treatment to control IOP, the patient was referred to the Department of Medicine for further assessment and management of *Argemone* intoxication.

**CASE REPORTS 2, 3, AND 4**

A female aged, 38 years and her two children, one boy of 12 years and a girl of 14 years, came with a history of blurring of vision in both eyes, with mild pain.

On examination, the mother had a visual acuity of 6/12, intraocular tension of 29 mm
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