EFFECT OF FLOWER OF AGASTI (SESBANIA GRANDIFLORA) ON NAKTANDHATA (NIGHT BLINDNESS): A CASE REPORT

Velhal Amol*

Associate Professor and Head, Department of Swatha Vritta, Seth Govindji Raoji Ayurved College, Solapur, Maharashtra, India

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*Corresponding Author: Dr. Velhal Amol.
Associated Professor & Head Department of Swatha Vritta, Seth Govindji Raoji Ayurved College, Solapur (M.S.), Cell No.-9271207790.

ABSTRACT

Globally, night blindness affects 5.2 million preschool-age children and 9.8 million pregnant women, which corresponds to 0.9% and 7.8% of the population at risk of blindness respectively. According to WHO vitamin A deficiency is endemic in India based on the ocular manifestations of xerophthalmia or deficient serum (plasma) retinol concentrations (<0.35 µmol/l). WHO has updated these estimates and reported that vitamin A deficiency is of public health significance in and is likely to be a problem. Government of India has launched many Nutritional programmes for prevention and treatment of the malabsorption, deficiency disorders. But they cannot reach to the grass root levels where they are actually needed. Sometimes the health centre is too far as far as rural India is concerned. Lack of knowledge, poverty, illiteracy, early marriages, and big family size is some direct and indirect contributing factors. Vitamin A deficiency is actually very common and can be easily curable with simple measures. If not treated at right time may lead to irreversable blindness. Ayurved is great science and considers every food article as medicine. Agasti (Sesbania grandiflora) can be successfully used to treat night blindness in all age groups.

Keywords: Xerophthalmia, Night Blindness, Vitamin A, Serum (Plasma) Retinol Concentrations, Irreversable Blindness, Agasti.

INTRODUCTION

1. About vitamin A deficiency

According to WHO vitamin A deficiency is endemic in India based on the ocular manifestations of xerophthalmia or deficient serum (plasma) retinol concentrations (<0.35 µmol/l). During the past decade, micronutrient deficiencies have been attracting attention of both academicians and administrators. In India, the micronutrient deficiency of public health significance is vitamin 'A' deficiency (VAD). Vitamins are the class of organic compounds which must be obtained from diet or supplementation. Body cannot synthesize them. Malabsorption of various etiologies can lead to deficiencies of these vitamins. The most common reasons cited by the mothers for the child not receiving the massive dose of vitamin A were, the same was not offered to their children (52%) or that they were not aware of it (34%). About two third of the mothers whose children reportedly received massive dose of vitamin A during the previous one-year felt that it was beneficial for the child. Of them, about 44% opined that it improved the general health of the child; about 22% felt that the eyes were healthy and about 10% reported that it prevented infections. Only about 13% of the mothers reportedly had received nutrition education on VAD, and the messages included, the need for regular consumption of GLV (10%) and yellow coloured fruits (6.5%), the beneficial effects of vitamin A supplementation on 9-35 months children (5.7%), signs and symptoms of VAD (5.3%); consequences of severe VAD and growing kitchen garden (4.4% each). 2. About Agasti (Sesbania grandiflora)

The word Agasti is a Sanskrit word. In Kannada it is Agachi, in Marathi it is Shevari, in Gujarati it is Ayathio and in English it is Sesban. The flowers are neither hot or cool in nature, they are useful in Naktandhata (night blindness). Agasti (Sesbania grandiflora or Aeschynomene grandiflora or Agati grandiflora or humming bird tree/ scarlet wisteria) is a small tree in the genus Sesbania. It is a fast-growing tree, leaves are regular and rounded and the flowers are white and red in color according to its species.

I report a case of reversible Naktandhata (night blindness or nyctalopia) secondary to vitamin A deficiency, which serves as a reminder of the condition and also as a warning that its incidence may be on the rise in the developed world.

CASE DESCRIPTION

A 16-year-old girl from very poor, non educated family presented with a two-year history of progressive night blindness. She was asymptomatic in daylight, but almost blind in the dark to the extent where she found walking difficult unless weather conditions were clear and bright. She had also
experienced bumping into street furniture and parked cars and other objects while walking through the village after dark. There was no personal or family history of ophthalmic disease.

On examination, her corrected visual acuity was 6/5 bilaterally. Anterior segment examination was unremarkable, with no evidence of corneal pathology. There were no pupillary abnormalities and fundal examination revealed healthy discs and maculae.

The differential diagnosis of nyctalopia was considered, including choroideremia, retinitis pigmentosa, gyrate atrophy and vitamin A deficiency. As far as her history, economic condition, standard of living, illiteracy was considered vitamin A deficiency was felt to be the most probable underlying cause. Further investigations revealed a reduced serum vitamin A level of 0.3 µmol/l (normal range 1.5–4.2 µmol/l) confirmed a diagnosis.

**Aims and Objective of case study**

To study the efficacy of flower of Agasti (Sesbania grandiflora) on Naktandhata (night blindness).

**Type of study:** Observational single case design without control group.

**Study center:** Seth Sakharam Nenchand Jain Ayurved Hospital, Solapur-413002.

**Age:** 16 years.

**Gender:** Female.

**Religion:** Hindu.

**Diet:** Mixed.

**Treatment plan**

1. The patient was advised to consume two fresh flowers of Agasti (Sesbania grandiflora) two times a day after washing properly as a whole, preferably ten to fifteen minutes before food.
2. She was also advised to instill two drops of Swarasa (juice) of flowers of Agasti (Sesbania grandiflora) in each eye two times a day regularly. She was taught with all antiseptic practices, method of hand washing etc.

**Duration of treatment**

The treatment was continued for 21 days.

**Protocol for patient**

Written consent was taken from the parents of the patient after proper counseling. Blood investigation like Complete blood count and serum vitamin A level was assessed.

**METHODOLOGY**

After reaching to the provisional diagnosis blood test was done for serum vitamin A level. Investigations revealed a reduced serum vitamin A level of 0.3 µmol/l (normal range 1.5–4.2 µmol/l). After 21 days continuous treatment further blood test was done. Investigations revealed an increase in serum vitamin A level of 3.8 µmol/l (normal range 1.5–4.2 µmol/l). There were no considerable changes in complete blood count.

**DISCUSSION**

Vitamin A is essential in the eye for corneal and conjunctival epithelial cell RNA and glycoprotein synthesis. Retinal (vitamin A aldehyde) is a vital component of the phototransduction process which underlies human vision. The systemic manifestations of hypovitaminosis A are varied, but among the ocular complications are conjunctival and corneal xerosis, keratomalacia and retinopathy. However, Naktandhata (night blindness, nyctalopia) is the earliest and most common symptom. These complications can lead to significant morbidity or permanent visual loss if untreated. If recognized early, prompt recovery of visual function may be achieved with adequate and sustained repletion therapy. However, due to the presence of considerable liver stores of vitamin A, development of deficiency-related symptoms can occur many years after deficiency as liver can store vitamin A in the form of Retinol palmittate which lasts for six months or more. This situation, combined with the relative rarity of vitamin A deficiency in the developed world, can lead to delays in diagnosis and treatment.

Vitamin A deficiency is primarily a problem in developing countries due to malnutrition. It remains uncommon in developed nations, occurring primarily in patients with liver disease, severe malabsorption or who have had small bowel surgery. However, the incidence may be on the rise with the recent increase in bariatric surgery, which is gaining popularity worldwide due to increased obesity.

As the ophthalmic complications of vitamin A deficiency tend to be reversible with adequate treatment with Agasti (Sesbania grandiflora). In particular, vitamin A deficiency should be prominent in the differential diagnosis of night blindness, which can be confirmed with a simple blood test.

**CONCLUSION**

It can be concluded that Agasti (Sesbania grandiflora) flowers can be used clinically to treat the, Naktandhata (night blindness, nyctalopia). It is easily available (as vegetable of these flowers is made and commonly consumed throughout India), cost effective, safe, easy to implement, palatable and no side effects of overdose.

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