



CASE REPORT

Glauropsia in Emergency Department

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Abstract

Introduction: Glauropsia is a rare disease that ensue with blue/gray vision or blurring of vision as a result of amine exhalation effect. It is known that the amine vapor forms caused epithelial edema and microcysts formation under the epithelium of the corneal surface. This mechanism is reason of ocular effects. The symptoms of amine effect start 30-90 minutes after exposure and within 4-6 hours and it recovers without any treatment. Amine vapor does not associate any chronic eye diseases.

Case presentation: We present a case of a 30-years-old male patient who had blue vision for 1 hours and had been sent by his occupational physician.

Conclusion: Glauropsia is a rare disease that has been diagnosed in emergency department. We also need to consider environmental factors such as occupational exposure in emergency care, especially with atypical presentations.

Keywords

Glauropsia, Emergency department, Blue/gray vision, Blurring of vision

Introduction

The term Glauropsia derives from the Greek word "glauke", which means "blue-green". Blue-Gray-Blurred vision, accompanying halo appearance around light, is the most common symptom of this disease [1]. It was firstly described in a meeting which organized by the British Chemical Manufacturers Association in the 1940s and then worked on by many scientists [2]. At the beginning of the years 2000, the visual effects of amine gases were defined more clearly. The vapor of N,

N-Dimethylethylamine (DMEA) is known to cause the disease.

Glauropsia which caused by exposing amine vapor is transient "blue/gray vision" or "blurred vision" for several hours. The symptoms associated with the disease often starts at the end of the day. Affected patients describe that atmosphere looks like "blue cigarette smoke". Most of the time, patients who exposed amine vapor notice this symptom when they were driving. The visual effects of the amine gas begin 30-90 minutes after exposure and recover spontaneously without treatment, within 4-6 hours [1].

It is known that the amine vapor forms caused epithelial edema and microcysts formation under the epithelium of the corneal surface. This mechanism is reason of ocular effects. However, Amine vapor does not associate any permanent eye damage.

Case Presentation

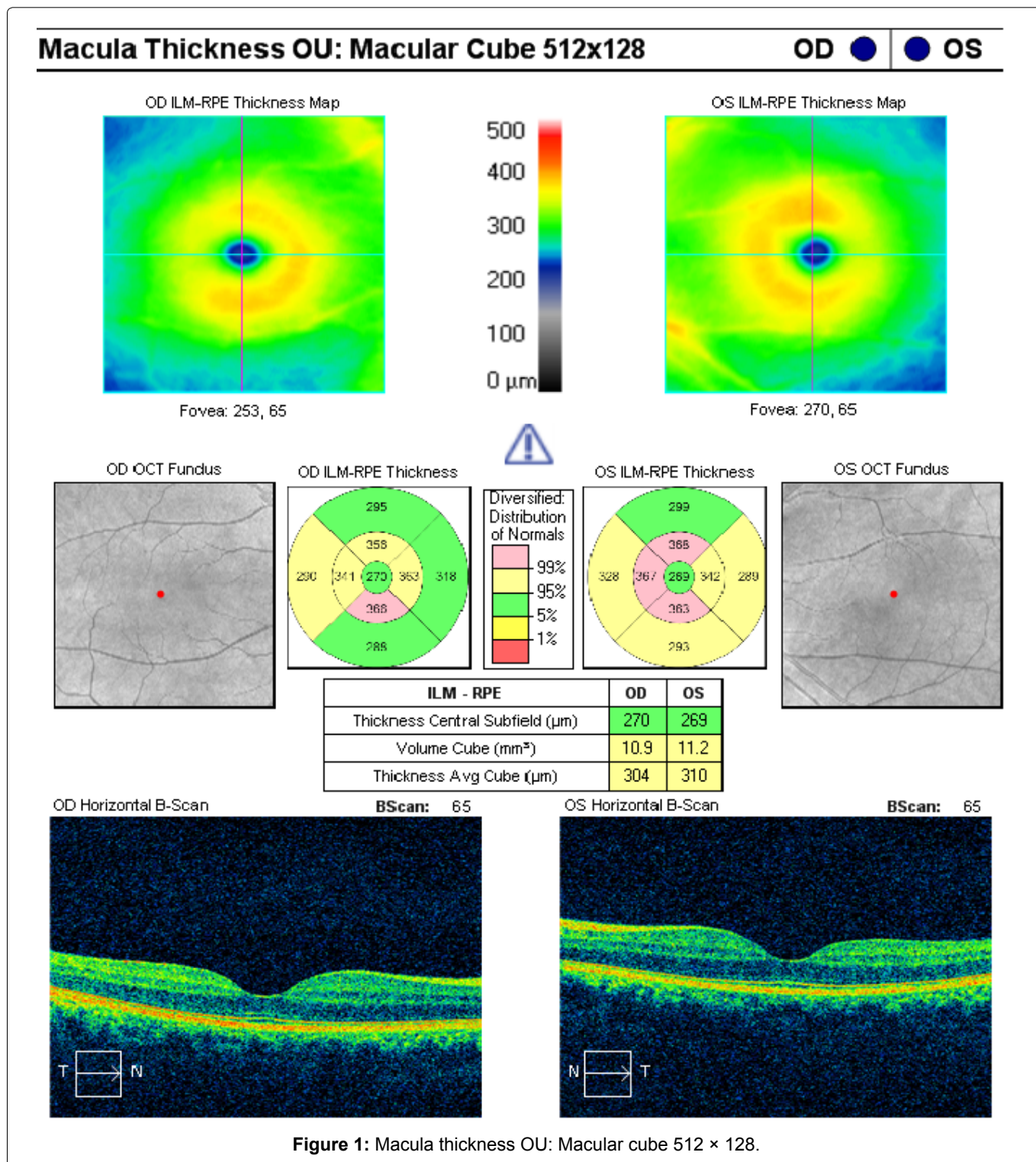
A 30-years-old male patient noticed that he had blurry vision while working in the workplace and applied to the occupational physician. The patient was directed to the emergency service by the occupational physician. He complained that he had blurred vision and saw everything in blue at outdoors.

The patient's symptoms started 1 hour before the emergency service application. He had been working as a worker in a foundry factory for 10 years, and had a blurred vision since the first hour of that work day. The use of amine gas was part of the workflow and

sometimes there were similar complaints in other employees. The general condition of patient was good, and the vital findings were stable. The physical examination of the patient was normal. The eye examination performed on the emergency department was also evaluated naturally. Neurological examination revealed no pathology. The patient stated that his visual complaints got better during the examination. The patient was also examined by an ophthalmologist. Examination findings were; best corrected visual acuity, biomicroscopy and funduscopy findings were normal, ocular tension was 12 mmHg bilaterally (Figure 1). The patient discharged without symptoms.

Discussion

Generally, Amine-related visual symptoms start after 1 hour of exposure and heal in a short time [3]. Amine gas related visual complaints begin within 30-90 minutes after exposure. Nevertheless, workers often notice that their visually impaired at the end of the day. The amine vapor forms caused epithelial edema and microcysts formation under the epithelium of the corneal surface. In our case, there was no pathological findings at the exam. This suggests that there may be a relationship between the absence of a pathological findings and the duration of the complaint.



It should not be forgotten that glaucopsia occur high dose exposure amines but also it may develop consistently long-term low dose exposure. It is not clearly delineated that which DMEA levels causes ocular effect but most of authors believes that lower than ≤ 5 ppm is safety area for visual symptoms. In experimental human studies by StÅhlbom, et al. [4] no glaucopsia was reported at ≤ 6.6 ppm DMEA levels. In another experimental study performed, DMEA was shown to cause blurred vision at 40 mg/m^3 [5]. In a study conducted, the inhalation-induced acute toxicity value was shown as 1641 ppm for rats [6]. Today lower than 5 ppm for DMEA is the permissible limit, for most developed countries in 8 hours worktime.

DMEA, a low molecular weight aliphatic amine, may be at higher concentrations in room air due to high volatility [7]. Tertiary amines exhibit irritant action for skin and mucous membranes. Symptoms such as headache, nausea and fainting are associated with inhalation [8]. Recent studies indicate that the DMEA is directly absorbed through the respiratory tract and its excretion is carried out as dimethylethylamine N-oxide (DMEAO) and DMEA via the urine [9]. If suspected of DMEA affected, these metabolites can be detected in the urine for diagnosis. According to the National Institute for Occupational Safety and Health (NIOSH), 1984 report, DMEA exposure was reported in a total of 33,474 workers in United States [10]. We know that these types of exposures are reduced and less frequently seen in emergency services with the health and safety measures taken.

Today, when compared to other occupational diseases, glaucopsia is not considered to be a serious occupational disease, since it recovers spontaneously, and does not result in a permanent damage, chronic illness or death. Due to the fact that the impact lasts in a few hours and the symptoms are well known in the industry in which it is used, amine related visual disturbances are rare cases of emergency department.

To consider environmental and occupational effects in emergency care, especially in atypical symptoms, will keep emergency physicians away from time, labor and financial loss, when evaluating diseases.

Conclusion

Glaucopsia is a rare disease that has been diagnosed in emergency department. We also need to consider environmental factors such as occupational exposure in emergency care, especially with atypical presentations.

Funding

None.

Conflict of Interest between Authors

The authors declare no conflict of interest.

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