ABSTRACT
Keratoconus is a disorder affecting the cornea, characterized by its variably progressive central thinning, which results in conically shaped protrusion. Patients with keratoconus are sometimes described as having peculiar personality characteristics. We present the case of a patient with keratoconus, complaining of impairment of concentration and memory disturbances. He reported slow progression of the complaints but was fully capable of performing his professional and social activities. Neuropsychological assessment confirmed fluctuations of active attention and diminished concentration. Long term memory was within normal limits, but closer to the lower level. MMSE score was 27. No significant changes were observed one year after baseline assessment. No major psychiatric disorder was found. In this clinical case we are tempted to discuss the possible role of keratoconus, which, as it has been described in the literature, could lead to some slight changes of behavior, forming a “keratoconic personality”.

Keywords: cognitive impairment, keratoconus, keratoconic personality

INTRODUCTION
Keratoconus is a disorder affecting the cornea, characterized by its variably progressive central thinning, which results in conically shaped protrusion. Severe cases can lead to disability and strong psychological effects for the patient [1]. Patients with keratoconus are sometimes described as having peculiar personality characteristics. Nevertheless, the literature lacks a sufficient number of studies on this subject.

Moreira et al. (2007) evaluated 68 patients with keratoconus and 52 subjects without the disease. The results showed psychosocial impairment in the keratoconus group. Patients were more pain avoiding, with more imaginative intuition, asocial withdrawal and anxious hesitation than the controls [2]. According to Gorskova et al. (1998), who examined male and female subjects with keratoconus, the population of men was characterized by increased levels of psychasthenia and schizophrenia, whereas women developed depression, psychasthenia, and schizophrenia [3]. On the other hand, the study of Cooke et al. (2003), comparing 118 keratoconic patients and 75 myopic controls, found little evidence to suggest that keratoconics might differ significantly in personality from a group of moderate to high myopes who also depend on contact lens correction for distance vision. The authors could not substantiate the clinical notion of the so-called keratoconic personality [4]. Having conducted a study including 109 patients with keratoconus, Mannis et al. (1987) revealed no specific complex of personality characteristics attributable to the disorder either. Patients with keratoconus differed from normal controls in much the same way as did patients with other chronic eye diseases [5]. A different view of the problem has been expressed by Giedd et al. (2005), who found keratoconus patients to be less respectful of practitioners, uncooperative, and noncompliant with treatment plans. This could cause physicians to look unfavorably on such patients and would also explain why the clinical perception of keratoconus patients persists, without a distinct keratoconus psychological profile [6].

With this case report, describing the clinical and neuropsychological characteristics of a patient with
bilateral keratoconus and subjective cognitive complaints, we would like to share our experience of a possible “keratoconic personality”.

**CASE REPORT**
A 58-year-old manager of an information technology company was admitted to the clinic of neurology for assessment due to cognitive complaints. Since the age of 7 years, the patient has complained of gradually diminishing vision of both eyes. At the age of 18 bilateral keratoconus was found and keratoplasty was performed. Vision was satisfactory after appropriate correction. A few years later the patient began to notice impairment of concentration, memory disturbances, such as difficulty in recalling names, numbers, and stories. He reported slow progression of the complaints. Though the patient was worried by his “mental problems”, he was fully capable of performing his professional and social activities.

Physical and neurological exam revealed no pathological findings. Hematology, blood chemistry and electrolytes were normal. Ophthalmological examination: visual acuity of 0.4 (20/50) for the right eye and 0.5 (20/40) for the left eye; anterior eye segment: bilateral central transplants, with clouding on the right; fundoscopy: partial illumination of the fundi, details not visible; keratoconus, postoperative state after keratoplasty. Brain MRI was conducted, showing normal results (Fig. 1). Neuropsychological assessment revealed fluctuations of active attention and diminished concentration; max. memory fixation = 90% (medium normal level); long term memory = 60% (lower normal level). MMSE score was 27. No impairment of activities of daily living was found (4-IADL score = 0). The patient was referred to a psychiatrist who found no major psychiatric disorder. One year later neuropsychological assessment was repeated. MMSE score was still 27 and no significant changes were observed on the other above-mentioned test scores.

![Fig. 1. Brain MRI. T2 FLAIR, axial (A) and coronal (B) planes: normal cerebral imaging.](image)

**DISCUSSION**
The patient whose case we describe was diagnosed with keratoconus at the age of 18. He was treated accordingly and promptly, and attained a satisfactory level of vision. The patient was referred to our clinic because of his cognitive complaints. We had to express our opinion of whether he was, or might become, demented. Of course, according to the DSM-IV criteria that we currently use, dementia was easily ruled out. This was also the case for mild cognitive
imparing, according to the modified criteria of Petersen, as the subjective cognitive complaints were not supported by abnormal neuropsychological test performance. The patient did not conform to the criteria one year later either. Moreover, one year after the baseline assessment, there was no deterioration of his neuropsychological performance. The complaints were not due to a psychiatric disorder. We are therefore tempted to discuss the possible role of keratoconus, which, as it has been described in the literature, could lead to some slight changes of behavior, forming a “keratoconic personality” [2, 3, 5]. Unfortunately, single cases are insufficient for a complete understanding of the problem of whether such personality type really exists, and more studies are needed for its clarification.

REFERENCES: