



ACADEMIC TESTS
AT THE FACULTY OF MEDICINE OF THE UNIVERSITY OF LISBON
INSTITUTE OF ADVANCED TRAINING

Masters:

Neurophthalmology

Name of Student:

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Subject of Thesis:

Cataract Surgery and its influence on the Sleep-Watchfulness rhythm.
Prospective/Comparative study on the use of two types of filters on Infra-ocular lenses.

Date of Defence:

22-04-2009

Classification:

Very good (20 on 20)

Jury:

President: Professor António Castanheira Dinis (FMUL)

Orientator: Professor António Castanheira Dinis (FMUL)

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ABSTRACT

The process of aging is a factor that influences on many aspects the circadian and sleep-wake regulating system. The prevalence of disrupted sleep complaints is much greater in older people than it is in young people.

The suprachiasmatic nuclei, the master circadian clock in mammals, receive direct retinal input via the retinohypothalamic tract, a monosynaptic pathway.

The photopigment in the non-image-forming photoreceptors has a maximum sensitivity in the blue part of the spectrum, at a wavelength (λ max) of 447-482 nm, identify as melanopsin. The human lens becomes yellowish with age, decreasing the transmission of visible light, especially blue spectrum, and may be related with the deterioration in the sleep-wake regulation in healthy ages.

The cataract surgery with implantation of a intraocular lens (IOL) may revert or maintain the alterations due to the yellow colouring that lens acquires in older ages depending on the filter used in the IOL (ultraviolet versus ultraviolet and yellow chromophore). The main objectives of his study are: to analyse the effect of cataract surgery in the sleep-wake rhythm and to compare the influence of two types of IOL filters on those results.

We made a prospective study in patients with bilateral cataract. Each select patient was studied in two phases. In a first phase we made the record of the variables on study: sleep quality questionnaire, sleepiness scale and actigraphic recording of 7 days before the surgery. The patients were divided in two groups: group 1 – bilateral cataract surgery with IOL UV bilateral implantation and group 2 bilateral cataract surgery with IOL UV + A. After the second surgery, in a second phase we recorded the same variables to compare each patient (before and after the surgery) and the 2 groups after surgery.

Of the 16 patients 12 were female and 4 male, with 74.6 years mean age. Medium average acuity with correction was 0.2 in phase 1, with post-operative improvement to 0.88.

On the Sleepiness Scale, 6 patients were identified with pathological results, three were doubtful and 7 normal in the first stage. After surgery these figures improved to 5 doubtful and 11 normal. The questionnaires on the quality of 9 sleep indicated that 10 out of 16 patients had poor sleep against only 2 in study phase 2.

The actigraphic records improvement in one or more parameters was achieved in 12 out of the 16 patients (75%). Rhythm regularity improved in 37.5% of patients, daytime drowsiness improved in 50% and insomnia in 42.5%. We did not find any statistical significant difference between the two groups after surgery in any variable studied.

Key Words: cataract, aging, circadian rhythms, blue light, filters