BLINK LAGOPHTHALMOS IN GRAVES ORBITOPHATY

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CIOP/CIEPO
30º Congresso Internacional de Oculoplástica
9º Congresso Internacional de Estética Periocular
sbcpo.org.br
13 e 14 de outubro
Centro de Convenções Rebouças
São Paulo/SP
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SOCIEDADE BRASILEIRA DE CIRURGIA PLÁSTICA OCULAR

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INTRODUCTION

Upper eyelid retraction induced by Graves' orbitopathy (GO) is one of the most characteristic signs of the disease, commonly associated with infrequent and incomplete spontaneous blinks, characterizing what is known as blink lagophthalmos. The aim of this study was to correlate eyelid retraction, spontaneous blinking, and the morphology of the levator muscle palpebrae superioris (LMPS).

METHODS

This case-control study included patients with eyelid retraction secondary to GO and control participants (C). They underwent margin-reflex distance 1 (MRD1) measurements, contrast-enhanced computed tomography (CT) scans of the orbits, and a dynamic eyelid study. The dynamic eyelid study utilized infrared reflective markers positioned on the upper eyelids and a high-resolution camera. Blinking movements were evaluated using specific software, and variables such as amplitude and maximum velocity of eyelid movements were extracted. The eye with the greatest retraction was selected for analysis in each group. A significance level of 0.05 was adopted for statistical analysis.

RESULTS

The study included 68 participants (36 in the GO group and 32 in the control group). Blinking amplitude and velocity did not differ significantly between the groups when analyzing absolute values. However, the ratio of amplitude to MRD1 was significantly smaller in the GO group compared to the C group ($p < 0.001$). This indicated that blinks not reaching the pupil (blink lagophthalmos) were more common in the GO group. In terms of CT findings, there was no correlation between the area of the levator muscle and upper complex and the amplitude of blinking movements in the participants with GO.

DISCUSSION

In individuals with GO, a reduction in the ratio of amplitude to MRD1 highlights the presence of blink lagophthalmos, which helps explain the frequent occurrence of ocular surface symptoms in these patients. The authors propose that the orbicularis oculi muscle might play a crucial role in maintaining relatively normal blinking amplitudes in GO patients, considering the significant retraction and enlarged size of the LMPS.

FIGURES

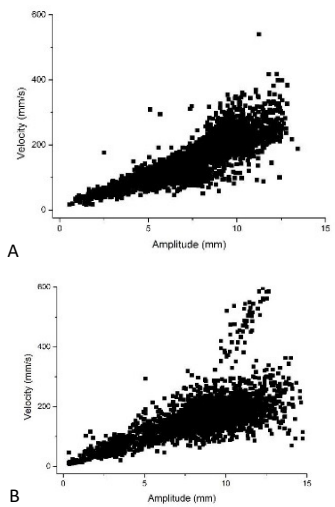

Figure 1. Blinks plotted by amplitude and velocity (main sequence) for controls (A) and patients (B).

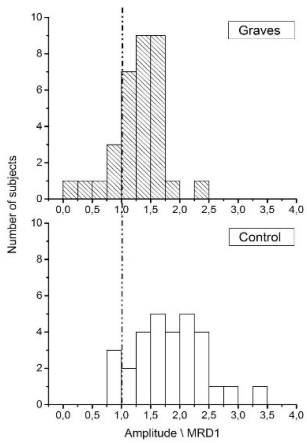

Figure 2. In group C, 10.0% of the subjects had a mean blinking amplitude < 1, against 18.2% of the patients in group GO).

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