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Volume 106, 2023 - Issue 5

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Research Article

Static and dynamic pupillary features in graves' ophthalmopathy

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Pages 551-555 | Received 27 Nov 2021, Accepted 24 Mar 2022, Published online: 01 Apr 2022

Cite this article <https://doi.org/10.1080/08164622.2022.2059344>



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ABSTRACT

Clinical Relevance

Pupillary characteristics may be affected in patients with Graves' ophthalmopathy (GO). However, small changes cannot be observed with clinical examination. Ophthalmologists and optometrists should be aware that dynamic pupillometry may have an important place in the quantitative assessment of pupillary characteristics in this patient population.

Background

The aim of this study was to compare the static and dynamic pupillary responses of hyperthyroid and euthyroid GO patients and healthy control subjects.

Methods

The study enrolled 20 hyperthyroid patients with GO (Group 1), 20 euthyroid patients with GO (Group 2) and 40 control subjects with normal thyroid function tests and no known illness (Group 3). Following detailed ophthalmological examination, static and dynamic pupillometry measurements were performed. Dynamic pupillometry measurements including resting diameter, amplitude of pupil contraction, latency of pupil contraction, duration of pupil contraction, latency of pupil dilation, duration of pupil dilation, and velocity of pupil dilation were undertaken. Static pupillometry measurements including scotopic, mesopic, low-photopic, and high-photopic pupil diameters (PD) were undertaken. Data from the right eyes of the participants were used for statistical analysis.

Results

Regarding the dynamic pupillary measurements, the latency of pupil contraction value was significantly higher ($p = 0.007$), and the velocity of pupil dilatation was significantly lower ($p = 0.004$) in Groups 1 and 2 compared to the Group 3. In static pupillary measurements, there were statistically significant differences between the GO group (Group 1 and 2) and Group 3 with regard to scotopic ($p = 0.002$), mesopic ($p = 0.002$), and low-photopic PD ($p = 0.001$).

Conclusion

Scotopic, mesopic and low photopic PD, latency of pupil contraction and velocity of pupil dilatation values were significantly different in both hyperthyroid and euthyroid GO patients when compared to healthy control subjects.

Q KEYWORDS: [Dynamic pupillometry](#) [Graves' ophthalmopathy](#) [hyperthyroidism](#) [Pupil diameter](#) [Static pupillometry](#)

Disclosure statement

No potential conflict of interest was reported by the author(s).

Consent for publication

We obtained consent for publication from each patient.

Ethical approval

All procedures performed in this study involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed consent

Informed consent was obtained from all individual participants included in the study.

Additional information

Funding

The authors have no funding to report.

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