

## Commentary: Risk factors predicting visual morbidity in thyroid eye disease

Gupta *et al.* in their original article titled “Visual Morbidity in Thyroid Eye Disease in Asian Indian Patients” have done a commendable job of reporting a fairly large cohort of 301 patients with thyroid eye disease (TED) in India.<sup>[1]</sup> There is a dearth of information on TED phenotypes in the Indian population and their outcomes after management. Risk factors predictive of severe disease phenotypes in TED will help prognostication and keep them under closer observation before quiescence sets in.

Diabetes Mellitus (DM) and thyroid dysfunction are the two most common endocrinology disorders.<sup>[2]</sup> In a recent nationwide survey in India representing 51% of population, an overall DM prevalence of 7.3% in adults >20 years of age was reported.<sup>[3]</sup> An additional 11% of the population were pre-diabetic defined as an impaired glucose tolerance or impaired fasting glucose tolerance.<sup>[3]</sup> Gupta *et al.* report 18% of TED patients were diabetic in their cohort.<sup>[1]</sup> While on a cursory look this may appear to be high, one needs to keep in mind that prevalence of DM in community cannot be directly compared to that in a subset of patients coming to a hospital. Grave’s disease and type 1 DM tend to coexist owing to their autoimmune origin.<sup>[4]</sup> In a recent cross-sectional survey

reported by Ramamurthy *et al.* from the southern part of India, 31% of TED patients had concurrent DM.<sup>[5]</sup> In the same study the prevalence of DM in severe TED was found to be 77%.<sup>[5]</sup> Management of these patients poses unique challenges owing to fluctuating glycemic levels, risk of sight threatening TED and even loss of vision in some patients.<sup>[4,6]</sup>

Gupta *et al.* found 19% visual morbidity in the cohort of 301 TED patients of which dysthyroid optic neuropathy (DON) constituted 14.3%, corneal breakdown 10%, and diplopia 8.6% of all TED patients.<sup>[1]</sup> DON is rare and typically seen in 5–8.6% of TED patients.<sup>[6,7]</sup> The relatively higher prevalence of DON in the series reported by Gupta *et al.* may be because one-fifth of their patients had concurrent DM. DM is known to cause microvasculopathy which may be responsible for the higher prevalence of DON in TED.<sup>[4,6]</sup>

Convincing evidence exists in the literature showing the causal role of smoking in the development and severity of TED.<sup>[8]</sup> In a recent meta-analysis smoking had a strong association in the development of TED (OR 1.9–20.2).<sup>[9]</sup> An increased risk of TED (RR 1.32), proptosis (RR 2.64) and diplopia (RR 3.14) in smokers versus never-smokers was reported in a cohort study.<sup>[10]</sup> In addition, smoking has been found to have dose-effect relationship in TED.<sup>[10]</sup> It is interesting to note that Gupta *et al.* did not find smoking to be a risk factor for visual morbidity in TED. Current smokers constituted 12.3% of the cohort.<sup>[1]</sup> It is not clear how many of their patients presented with visual morbidity compared to those who

developed the same over the course of their follow-up.<sup>[1]</sup> While the authors argue that cessation of smoking may have influenced the course of the disease, this is unlikely to have helped patients presenting with visual morbidity.

In summary, the study reported a large cohort of 301 Asian Indian patients and found male gender, older age and DM were risk factors for visual morbidity in TED. As the global prevalence of DM increases and hopefully that of smoking decreases over time, optimal treatment strategies for TED with concurrent DM need to be devised. This is the need of the hour and prospective multi-center studies will be a step in that direction.

#### Financial support and sponsorship

Nil.

#### Conflicts of interest

There are no conflicts of interest.

#### Suryasnata Rath

Ophthalmic Plastic and Reconstructive Surgery Services,  
L V Prasad Eye Institute, Bhubaneswar, Odisha, India

Correspondence to: Dr. Suryasnata Rath,  
L V Prasad Eye Institute, Mithu Tulsu Chanrai Campus,  
Patia, Bhubaneswar - 751 024, Odisha, India.


E-mail: suryasnata@lvpei.org

#### References

- Gupta R, Thomas R, Almkhatar F, Kiran A. Visual morbidity in thyroid eye disease in Asian Indian patients. *Indian J Ophthalmol* 2020;68:1622-7.
- Duntas LH, Orgiazzi J, Brabant G. The interface between thyroid and diabetes mellitus. *Clin Endocrinol* 2011;75:1-9.
- Anjana RM, Deepa M, Pradeepa R, Mahanta J, Narain K, Das HK, *et al.* Prevalence of diabetes and prediabetes in 15 states of India: Results from the ICMR-INDIAB population-based cross-sectional study. *Lancet Diabetes Endocrinol* 2017;5:585-96.
- Le Moli R, Muscia V, Tumminia A, Frittitta L, Buscema M, Palermo F, *et al.* Type 2 diabetic patients with Graves' disease have more frequent and severe Graves' orbitopathy. *Nutr Metab Cardiovasc Dis* 2015;25:452-7.
- Ramamurthy LB, Rangarajan V, Srirao N, Malini B, Bansal R, Yuvarajan K. Severity of thyroid eye disease and type-2 diabetes mellitus: Is there a correlation? *Indian J Ophthalmol* 2020;68:1127-31.
- Kalman R, Mourits MP. Diabetes mellitus: A risk factor in patients with Graves' orbitopathy. *Br J Ophthalmol* 1999;83:463-5.
- Saeed P, Tavakoli Rad S, Bisschop PHLT. Dysthyroid Optic Neuropathy. *Ophthal Plast Reconstr Surg* 2018;34(4S Suppl 1):S60-7.
- Prummel MF, Wiersinga WM. Smoking and risk of Graves' disease. *J Am Med Assoc* 1993;269:479-82.
- Thornton J, Kelly SP, Harrison RA, Edwards R. Cigarette smoking and thyroid eye disease: A systematic review. *Eye* 2007;21:1135-45.
- Pfeilschifter J, Ziegler R. Smoking and endocrine ophthalmopathy: Impact of smoking severity and current vs lifetime cigarette consumption. *Clin Endocrinol (Oxf)* 1996;45:477-81.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

#### Access this article online

Quick Response Code:	Website:
	<a href="http://www.ijo.in">www.ijo.in</a>
	DOI: 10.4103/ijo.IJO_1851_20

Cite this article as: Rath S. Commentary: Risk factors predicting visual morbidity in thyroid eye disease. *Indian J Ophthalmol* 2020;68:1627-8.