Neurobiological underpinnings of obsessive compulsive disorder and schizophrenia: Explanations for disability and severity

In the present issue of this journal a paper examines the family burden, quality of life and disability in obsessive compulsive disorder (OCD). Gururaj et al., demonstrate in a study of inpatients with OCD similar rates of disability and family burden in comparison to those with schizophrenia. The authors are commended for detailed examination of the impact of OCD on the family that has not been done extensively in the past.

Although the study is limited by the fact that the sample includes only inpatients, this paper is still important because it shows that in severe cases of OCD, the level of dysfunction is significant. Previous work by Kessler et al., has shown that in the US general population OCD has a high level of impairment and this seems to be higher than other anxiety disorders. Further study of the impact of OCD on family burden and disability is required utilizing random samples to reduce the selection bias of treatment-seeking samples.

One possible explanation for these findings might involve looking at the neurobiological correlates of OCD and schizophrenia. Although there has been a significant interest in the amygdala and the prefrontal cortex in the anxiety disorders, there is substantial evidence of dysfunction in the cortical striatal-thalamic network among patients with OCD and schizophrenia. This dysfunctional network overlap may account for some of the obsessions, for example that in severe form be associated with lack of insight. At times, the obsessive thoughts are so strong that they are at a delusional level of severity. Even in the DSM criteria there is a subtype of OCD called “OCD with poor insight” and this severe form of OCD is often associated with significant and severe dysfunction.

Neuroimaging studies in OCD have shown that response to pharmacotherapy and behavior therapy involves changes in blood flow to orbital frontal cortex and striatal structures.

While neuroimaging studies in other anxiety disorders, specifically social phobia, have shown that response to treatment is associated with reduction in blood flow to the amygdala. A large body of literature suggests that blockade of dopamine in striatal structures is important in the treatment of schizophrenia.

From a treatment perspective, there has been a significant amount of literature that has shown the utility of adjunct antipsychotics in treating OCD. We believe that this may also be related to the fact that OCD shares a lot of the underpinnings with schizophrenia. Future studies are required to directly compare patients with schizophrenia and obsessive compulsive disorder using neuroimaging and biological studies.

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References

Upper airway obstruction due to goiter: An overlooked problem!

The anatomical relationship between the thyroid gland and the trachea is of great clinical importance. The intra-tracheal air flow rate may be critically compromised if the lumen is deformed by a goiter. The prevalence of upper airways obstruction due to thyroid enlargement is very poorly known and most of the previous studies are done in a small number of selected patients. In a study from the UK one-third of consecutive patients with goiter had upper airway obstruction detected by lung function tests. Surprisingly, these patients did not have more respiratory complaints than did patients with a normal lung function. This is probably explained by the fact that the thyroid enlargement usually develops over years and the patient may get used to the condition. Thus, many individuals presenting with goiter do not have respiratory symptoms and the airway obstruction must be detected by use of other methods. Imaging of the trachea can be done by plain X-ray, computerized tomography (CT), magnetic resonance imaging (MRI) and to some extent ultrasound. Plain X-ray has a low sensitivity and shows poor correlation with the air flow rate. The cross-sectional area of the trachea is of great clinical importance. The intra-tracheal air flow rate increases if the tracheal area is increased.

In this issue of the Journal of Postgraduate Medicine Pradeep and co-workers present a prospective study of 64 patients with goiter and the effect on the lung function following thyroidectomy. The study is until now the largest of its kind. The patients did not have respiratory complaints at inclusion. After thyroidectomy, improvements were found in the tidal volume and in some expiratory parameters among females and in the airway resistance among men, respectively. Unfortunately, the inspiratory function was not monitored and if done it might have revealed an even greater benefit from the operation. The study included an assessment of the tracheal diameter by X-ray but this variable was not part of the follow-up.

A favorable effect on the respiration following treatment of the goiter was reported more than 30 years ago and has been verified in subsequent studies. In one study a 25% increase of the maximal inspiratory flow rate was found after thyroidectomy even in patients with a normal tracheal radiogram preoperatively. No study of thyroidectomized patients has been performed in which both the lung function and the tracheal area were monitored.

Therapy is also effective in this context. In two previous studies in patients with large goiters radiiodine therapy resulted in an increase of the cross-sectional area of the trachea (determined by MRI) by 17-36% which correlated with the goiter reduction. The inspiratory capacity improved by 20-25% without any change of the expiratory parameters. It is likely that the exact topo-anatomical relationship between the goiter and the trachea plays a role. Thus, the benefit resulting from goiter shrinkage/removal should theoretically be greater if the trachea is encircled by the thyroid rather than just displaced from the midline, but no studies have evaluated this aspect. Most studies have shown that goiter reduction improves mainly the inspiration and to a lesser extent the expiration. During inspiration the higher air flow through a stenotic passage induces a negative transmural pressure gradient across the tracheal wall and this may cause a partial collapse of the tracheal cartilage. During expiration the drop in the transmural pressure is less critical since the pre-stenotic (i.e. intrathoracic) air pressure is above the atmospheric level. Thus, a lung function test should include the inspiratory phase of the respiration and a flow volume loop is recommended for this purpose.

The study by Pradeep et al. emphasizes that upper airway obstruction is present in a significant fraction of patients with goiter, but this problem is probably overlooked by many clinicians. Since it seems well proved by this study and other studies that goiter treatment improves the respiratory function, this is a strong argument for following an active therapeutic strategy - even in relatively asymptomatic patients.