Journal Homepage: - www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/19663
DOI URL: http://dx.doi.org/10.21474/IJAR01/19663

RESEARCH ARTICLE

ANAESTHESIA MANAGEMENT IN A CASE OF HYPERTHYROID WITH PROPTOSIS FOR ENDOSCOPIC DECOMPRESSION

Dr. Ashish Raj and Dr. Mona Jadhav

Manuscript Info

Manuscript History
Received: 15 August 2024
Final Accepted: 18 September 2024
Published: October 2024

Key words:-
Thyroid Associated Orbitopathy, Graves Orbitopathy, Proptosis, Decompression Surgery, Thyrotoxicosis

Abstract

This article describes a case of a 65-year-old man with hyperthyroid and who underwent left orbit endoscopic decompression for left eye proptosis. The article also discusses the management of thyroid eye disease (TED) in general. Thyroid associated orbitopathy, also known as Graves' orbitopathy, is the most common cause of proptosis (bulging of the eye). It is an autoimmune disease that affects the muscles and fatty tissues around the eye. TED is most commonly associated with Graves' disease, an autoimmune disease that causes an overactive thyroid gland. However, TED can also occur in people with normal thyroid function or an hyperactive thyroid gland. The article presents a case of a 65-year-old man with TED who underwent decompressive surgery to relieve pressure . The article also discusses the importance of maintaining euthyroid (normal thyroid function) in patients with TED.

Introduction:-

Grave's orbitopathy, also known as Thyroid associated orbitopathy, is now acknowledged as the common causes for proptosis (exophthalmos; protrusion of globe). It is the most common non-thyroidal symptom of Graves' disease, an autoimmune disorder that impacts approximately one-third of individuals with hyperthyroidism from Graves' disease.(1)

Thyroid eye disease (TED) is primarily linked to hyperthyroidism, accounting for around 90% of cases. However, around 10% of individuals with TED may have either a normally functioning thyroid (Euthyroid) or functioning below normal (Hypothyroidism like Hashimoto thyroiditis).(2) An accurate diagnosis is crucial for patients with thyrotoxicosis because treatment options differ depending on the cause. For instance, anti-thyroid drugs are not recommended for cases of thyrotoxicosis caused by thyroiditis or iatrogenic factors as these conditions do not involve increased synthesis of thyroid hormones.

Case Report

We report a case of 65/M with left eye swelling with watering , since 2 months with Left nasal blockage and blood stained discharge. The patient was diagnosed with Left eye proptosis with thyrotoxicosis.

On examination , face shows left peri-orbital swelling and left eye shows lid retraction with lid lag with positive Dalrymple sign, von graffe sign, enroth and kocher sign positive with normal thyroid gland.

For which patient was taking T.Carbimazole 10 mg BD since 2 years.

Hb	14.3 g/dl

Corresponding Author:- Dr. Ashish Raj

S.NA	136 mmol/L
S.K	4.3mmol/L
S.CL	108 mmol/L
T3	219 nmol/L
T4	10.5ng/ml
TSH	0.34 mIU/L

Figure 1:- Investigations Hb- Hemoglobin , S.NA- Serum sodium ,S.K- Serum potassium ,S.CL- Serum chloride T3- Triiodothyronine ,T4- Thyroxine ,TSH- Thyroid stimulating hormone

g/dl - (grams/deciliter) , mmol/L - (millimoles per liter) , nmol/L –nanomoles per literng/ml- nanogram per liter , mIU/L - mill-international units per liter

On the day of surgery , patient was orally administered 10 mg T.Carbimazole with sips of water. Upon arrival in operating room standard ASA monitors including pulse oximeter, ECG, NIBP and temperature monitors were applied and baseline readings were recorded.
IV fluids Ringer lactate was started at 2-4ml/kg/hour.

BP- 130/70 MM HG
P- 82 per minute
SPO 2 – 99 %

Pre-oxygenation was done for 3 minutes . Prior to endotracheal intubation, injection hydrocortisone 100 mg was also given. Endotracheal intubation was easily performed using a 8.0 portex cuffed tube in first attempt using bougie guided direct laryngoscopy, position confirmed by auscultation and capnography, cuff inflated and secured with cuff pressure 18-25 mm hg.

A16 FG Ryle's tube was also secured for giving anti-thyroid drugs intra-operatively. External manipulation of neck was avoided. The lungs were mechanically ventilated on volume control mode. During the procedure, the patient's hemodynamic status was stable with no tachycardia/bradycardia or cardiac arrhythmias.

At the end of surgery patient was extubated after giving reversal agent once the patient was fully awake, conscious,obeying commands with adequate and regular respiratory efforts and shifted torecovery area in a stable condition .

Discussion:-

TED is a condition where the immune system attacks orbital fibroblasts due to Graves disease-related autoantibodies. Orbital adipose tissue is a unique fat depot. Robust orbital inflammation produces high levels of pro-inflammatory cytokines Interleukin -1 and prostaglandins.[3]

The inflammatory cascade functions as a loop of positive feedback. Thymus cell antigen 1 – fibroblasts that are turned into fat cells, release Interleukin-6, and attract B-cells and plasma cells. When stimulated by Insulin growth factor 1 receptor, Thymus cell antigen-1 + fibroblasts release Interleukin-16 to attract T-cells.

T-cells also release interferon-gamma and tumor necrosis factor-alpha (TNF-a) to promote myofibroblast activity and hyaluronate production. In response to Interleukin-6, B-cells in the orbit increase production of auto-antibodies. Extra ocular muscle -predominant orbitopathy results in fibrosis of the eye muscle due to persistent inflammation by the Thy-1 + cell cluster, exhibit an increase in the size of the orbital fat tissues - a condition characterized by fat dominance in the orbitopathy. Individuals under the age of 40 exhibit increased Thymus cell antigen-1 response and demonstrate expansion of orbital fat. Elderly TED patients aged 70 and above are more likely to exhibit a Thymus cell antigen -1 + response and demonstrate muscle enlargement in a spindle-shaped manner.(4)

Our patient may have had more severe thyrotoxicosis, than his lab values indicated . The normal values for thyroid hormones are determined for all ages and may not apply to sick patient with 60 years or older because reports suggest that S.TSH is low with old age, so our patient S.TSH was effectively lower than suggested and

hyperthyroidism was probably severe than predicted. A high index of suspicion is essential for patients with the classic symptoms of thyroid eye disease, with no history of thyroid disorders or a euthyroid status at presentation. The classic features of thyrotoxicosisinclude hyperactivity, weight loss and tremor , of particular importance to anesthetists are the cardiovascular effects, which may include atrial fibrillation, congestive cardiac failure and ischemic heart disease.(5) An endocrine workup and orbital imaging are essential for a definite diagnosis in the absence of classical clinical presentation. The management includes strict maintenance of euthyroid status, cessation of smoking, adequate lubrication, adequate control of the IOP.(6)

In TED patients, attention should be directed to the possibility of comorbidities, including autoimmune disorders (such as diabetes mellitus), or smoking-related disease.

In a case where thyrotoxicosis patient undergo elective surgery, always give treatment to make patient euthyroid to prevent complications like thyroid storm.(7,8,9,10)Patients receiving triiodothyronine (T3, half-life 1.5 days) are advised to continue their usual dose on the day of surgery, while it is optional for patients taking tetraiodothyronine (T4, half-life seven days). All anticoagulant medications (warfarin, antiplatelet agents, oral anticoagulants) should be discontinued, whenever possible, especially before orbital decompression.

Image 1:- Patient after left eye endovascular decompression surgery.

Informed consent from the patient taken, No conflict of interest

References:-

1. Yang DD, Gonzalez MO, Durairaj VD. Medical management of thyroid eye disease. Saudi J Ophthalmol 2011; 25: 3–13.
2. Bartley GB, Fatourechi V, Kadrmas EF, et al. Clinical features of Graves' ophthalmopathy in an incidence cohort. Am J Ophthalmol 1996; 121: 284–290.
3. Moshkelgosha S, So PW, Deasy N, Diaz-Cano S, Banga JP. Cutting edge: retrobulbar inflammation, adipogenesis, and acute orbital congestion in a preclinical female mouse model of Graves' orbitopathy induced by thyrotropin receptor plasmid-in vivo electroporation. Endocrinology. 2013 Sep;154(9):3008-15.
4. Bahn RS. Clinical review 157: Pathophysiology of Graves' ophthalmopathy: the cycle of disease. J Clin Endocrinol Metab. 2003 May;88(5):1939-46.
5.Kahaly GJ , Nieswandt J , Mohr-Kahaly S. Cardiac risks of hyperthyroidism in the elderly. Thyroid 1998; 8: 1165-1169
6. Kumari R, Chandra Saha B. Advances in the management of thyroid eye diseases: an overview. Int Ophthalmol 2018; 38: 2247–2255
7.Barrio-Barrio J, Sabater AL, Bonet-Farriol E, et al. Graves' ophthalmopathy: VISA versus EUGOGO classification, assessment, and management. J Ophthalmol 2015; 2015: 249125.

8. Eckstein A, Schittkowski M, Esser J. Surgical treatment of Graves' ophthalmopathy. **Best Pract Res Clin Endocrinol Metab** 2012; 26: 339–358.
9. James ML. Endocrine disease and anaesthesia. A review of anaesthetic management in pituitary, adrenal and thyroid diseases. **Anaesthesia** 1970; 25: 232–252.
10.Stehling LC. Anesthetic management of the patient with hyperthyroidism. **Anesthesiology** 1974; 41: 585–595.