MAK HILL Publications Research Journal of Medical Sciences

Research Article
doi: 10.36478/makrjms.2013.201.205

A Comparative Analysis Between Intrathecal Isobaric Ropivacaine 0.75% Plus Dexmedetomidine and Isobaric Ropivacaine 0.75% Along with Fentanyl for Lower Abdominal and Lower Limb Surgeries

[1]Raja Damarla and [2]B.J. Kavitha Kumari

[1] *Department of Anaesthesiology, MNR Medical College, Sangareddy, Telangana, India*

[2]*Department of Anaesthesiology, Apollo Institute of Medical Sciences and Research, Hyderabadm India*

OPEN ACCESS

Key Words
Ropivacaine, bradycardia, motor block, dexmedetomidine

Corresponding Author
B.J. Kavitha Kumari,
Apollo Institute of Medical Sciences and Research, Hyderabad, India

Author Designation
[1,2]Associate Professor

Received: 20 August 2013
Accepted: 30 September 2013
Published: 31 October 2013

Citation: Raja Damarla and B.J. Kavitha Kumari, 2013. A Comparative Analysis Between Intrathecal Isobaric Ropivacaine 0.75% Plus Dexmedetomidine and Isobaric Ropivacaine 0.75% Along with Fentanyl for Lower Abdominal and Lower Limb Surgeries. Res. J. Med. Sci., 7: 201-205, doi: 10.36478/makrjms.2013.201.205

ABSTRACT
A prospective randomized controlled study was conducted involving 60 patients belonging to ASA group I and II coming for lower abdominal and lower limb surgery. They were randomly divided into 2 groups of 30 each. Group RD received 2ml of 0.5% isobaric Ropivacaine plus Dexmedetomidine 5 µg. Group RF received 2ml of 0.75% isobaric Ropivacaine plus Fentanyl 20 µg. All patients were premeditate and pre-loading was done with 1000 ml of ringer lactate. Following institution of subarachanoid block sensory characteristics such as onset of sensory block at T 10, maximum level of block, duration of sensory block and motor blockade characteristics such as onset of motor block, duration and quality of motor blockade were studied. Hemodynamic parameters like heart rate, NIBP and SpO2 were monitored every 5min for one hour. Incidence of side effects such as hypotension, bradycardia and nausea, vomiting and pruritus were noted. Demographics were comparable between both groups. Time of onset of sensory block at T10 level was faster with Dexmedetomidine and Ropivacaine. Total duration of sensory block was longer with Dexmedetomidine compared to Fentanyl as adjuvant to Ropivacaine. Onset of motor block is comparable between both groups and it is not clinically and statistically significant. Total duration of motor block was longer with Dexmedetomidine compared to Fentanyl as adjuvant to Ropivacaine. Hemodynamics in both groups were comparable with no clinical and statistical significance. Maximum height of sensory block and degree of motor block were similar in both groups. Among the side effects, occurrence of bradycardia was more with Dexmedetomidine compared to Fentanyl as adjuvant to Ropivacaine. Other side effects were not clinically and statistically significant.

INTRODUCTION

Grave's ophthalmopathy (GO), Thyroid Eye Disease (TED), or Thyroid-associated Orbitopathy (TAO) is an immune-mediated inflammatory disorder that produces enlargement of the extraocular muscles and fat in orbit. Edema, accumulation of glycosaminoglycans and collagen and adipogenesis cause most patients to have enlargement of both extraocular muscles and orbital adipose tissue with a predominance of either one in some patients[1,2]. GO is the most common and most important extrathyroidal manifestation of Grave's disease (GD)[3]. This condition generally occurs in patients with Grave's hyperthyroidism but sometimes may take place in patients with euthyroid or hypothyroid autoimmune thyroiditis[1]. The ocular changes associated with thyroid disease were first published by Graves' in 1835 and by Von Basedowin 1840. They noted swelling of tissues around the eyes in patients with hyperthyroidism, but in 1786 Parry described a condition of goiter and eye protrusion. GD is an autoimmune disorder where loss of immunological tolerance to the thyroid-stimulating hormone receptor (TSH-R) is pivotal to the appearance of the specific antibodies[4,5]. Grave's ophthalmopathy may occur before, with, or after the onset of overt thyroid disease and usually has a slow onset over several months. Management should consist of a coordinated, multi disciplinary, medical and surgical approach based on the nature of the disease and its effect on the orbital and ocular structures. It is usually directed by abating or controlling the active phase of the disease, prevention of ocular and psycho physical damage, regressing ocular motor abnormality and improving the cosmetic disfigurement. Although most cases of TAO can be managed medically without any visual loss, it may result in vision-threatening conditions like exposure keratopathy and compressive optic neuropathy. The current therapeutic options are corticosteroids, external beam radiation and, steroid-sparing immunosuppressive agents which reduce the inflammation during the active phase and the surgery which correct the residual abnormalities secondary to fibrosis in the inactive phase of the disease. These interventions are aimed at the consequences of the disease rather than targeting its causes[6]. Unfortunately, these treatments do not prevent or reverse the pathological changes in the orbital tissues[7-11].

MATERIALS AND METHODS

This is a prospective study on "Thyroid Orbitopathy" conducted to study the incidence and various modes of presentation of "Thyroid Orbitopathy".

Inclusion Criteria:

- All ages.
- Both genders.
- All cases of proptosis with signs and symptoms and investigations suggestive of thyroid orbitopathy.

Exclusion Criteria:

- All cases with a similar presentation which are not proved to be of Thyroid Orbitopathy.
- Patients who did not report for follow-up.

Sample Size: 40 cases.

Methods:

- A comprehensive ophthalmic examination was performed in a standardized way for all patients. Best corrected visual acuity was documented by Snellen chart. Intraocular pressure (IOP) was measured by applanation tonometer in the primary position and with upward gaze. Eyelid, conjunctiva and ocular motility were assessed. Tear status was evaluated with Schirmer test and tear break-up time. We considered Schirmer <10 mm and tear break-up time <10 seconds as tear film dysfunction. The degree of proptosis was measured by the Hertel exophthalmometer. Proptosis was defined as the measurement of protrusion of the globe >20 mm from the lateral orbital rim in either eye or any discrepancy in the degree of protrusion of the two eyes by >2mm. Fundus examination was done for the evaluation of disc and retina.
- Apart from the routine hematological examinations, the patient will be subjected to radiological investigations like ultrasound or CT scan or both as per the clinical requirement to assess the lesion as well as monitor its progression or regression.
- Serological investigations which include Thyroid profile.
- Once the case is confirmed to be of thyroid orbitopathy, depending on the stage of clinical presentation, the patients will be reassured and observed. All patients will be referred to an endocrinologist for management of thyroid dysfunction.
- All the patients will be followed for six months. The first follow up will be at the 1stweek and then at 1st, 3rd and 6th months

RESULTS AND DISCUSSIONS

Of the 40 cases analyzed, female preponderance was noted. Based upon the thyroid status of the patients, they were subdivided into three groups namely: Hyper thyroid, Euthyroid and Hypothyroid. 70% of the patients were hyper thyroid followed by euthyroid in 20% and then hypothyroid in 10% of the patients.

Table 1: Modes of Presentation

Modes of Presentation	No. of patients	Percentage
Lid retraction	32	80%
Periorbital swelling	25	62.5%
Proptosis	24	60%
Chemosis	24	60%
Congestion	18	45%
Dry eyes	05	12.5%
Diplopia	04	10%
Motility defects	04	10%

Table 2: Laterality Status

Laterality	No. of patients	Percentage
Bilateral	32	80%
Unilateral	08	20%
Right eye	06	15%
Left eye	02	5%

The incidence of involvement of the various rectus muscles was also analyzed based upon ultrasonography and computed topographic findings. It was found that inferior rectus was the commonest muscles involved followed by medial rectus, superior rectus and lateral rectus in descending order.

Table 3: Muscle Involvement

Muscle involved	No. of patients	Percentage
Inferior rectus	28	70%
Medial rectus	20	50%
Superior rectus	11	27.5%
Lateral rectus	06	15%

In our study, 80% of the patients were below 50 years of age. The age range was 18-67 with the mean age of the patients being 41.82 years. The mean age for the females was 40 years and for the males was 46.08 years. In our study, there were 28 females and 12 males. Female to male ratio was 2.3:1. In our study, 40 patients with thyroid orbitopathy were studied. Among the 40 patients, in the descending order of frequency, 28 patients (70%) were hyper thyroid, eight patients (20%) were euthyroid and four patients (10%) were hypothyroid. In our study, 32 patients (80%) had bilateral involvement while only eight patients (20%) had unilateral involvement. Among the eight patients with unilateral involvement, the right eye was involved in 6 patients (15%) and the left eye was involved in 2 patients (5%).

In Our Study, the Most Common Signs of TED in the Descending Order of Frequency were:

- Lid retraction (80%).
- Periorbital edema (62.5%).
- Proptosis (60%).
- Chemosis (60%).
- Congestion (45%).
- Dry eye (12.5%).
- Motility defects (10%).
- Diplopia (10%).

In Our Study, the Most Commonly Affected Muscle in the Descending Order of Frequency was:

- Inferior rectus (70%).
- Medial rectus (50%).
- Superior rectus (27.5%).
- Lateral rectus (15%).

CONCLUSION

In most of the instances, it is mild and non-progressive, but in 3-5% of cases, it may lead to severe complications. Two diagnostic modalities have revolutionized the scope and accuracy of orbital evaluation-USG and CT scan. Although the unequivocal diagnosis of orbital diseases can be made only by histopathological examination, current noninvasive procedures can provide a correct general diagnosis in most diseases. Non-severe TED requires only supportive measures, such as eye ointments, sunglasses and prisms. In contrast, severe TED requires aggressive treatment, either medical (high-dose glucocorticoid, orbital radiotherapy) or surgical (orbital decompression). Thyroid orbitopathy is a matter of important health concern among patients with a thyroid disorder. Since it occurs with a high prevalence in all thyroid states, a close collaboration between the endocrinologists and ophthalmologists along with the timely referrals of patients with an eye complaint is deemed necessary.

REFERENCES

1. Bahn, R.S., 2010. Graves' Ophthalmopathy. New Engl. J. Med., 362: 726-738.
2. Dolman, P.J., 2012. Evaluating Graves' Orbitopathy. Best Pract. And Res. Clin. Endocrinol. and Metab., 26: 228-248.
3. Bartalena, L., L. Baldeschi, A. Dickinson, A. Eckstein and P. Kendall-Taylor *et al.,* 2008. Consensus statement of the European Group on Graves' orbitopathy (EUGOGO) on management of GO. Eur. J. Endocrinol., 158: 273-285.
4. Rapoport, B. and S.M. McLachlan, 2007. The Thyrotropin Receptor in Graves' Disease. Thyroid, 17: 911-922.
5. Banga, J.P., C.H. Nielsen, J.A. Gilbert, D.E. Fassi and L. Hegedus, 2008. Application of New Therapies in Graves' Disease and Thyroid-Associated Ophthalmopathy: Animal Models and Translation to Human Clinical Trials. Thyroid, 18: 973-281.
6. Maheshwari, R. and E. Weis, 2012. Thyroid associated orbitopathy. Indian J. Ophthalmol., 60: 87-93.

7. Wiersinga, W.M. and M.F. Prummel, 2001. Pathogenesis of Graves' Ophthalmopathy-Current Understanding. The J. Clin. Endocrinol. and Metab., 86: 501-503.
8. Karasek M., *et al.,* 2003. Etiopathogenesis of Graves' disease. Neuro Endocrinol Lett., 24: 161-166.
9. Vladutu C., *et al.* 2008. Therapeutic options in thyroid ophthalmopathy. Ophthalmologia., 52: 126-136.
10. Fernandez H.R.V., *et al.,* 2008. Clinical manifestations of thyroid ophthalmopathy. AnSistSanitNavar., 31: 435-56.
11. L Chan, L., H. ,E Tan, S. Fook-Chong, T. ,H Teo, L. H Lim and L. ,L Seah, 2009. Graves Ophthalmopathy: The Bony Orbit in Optic Neuropathy, Its Apical Angular Capacity, and Impact on Prediction of Risk. Am. J. Neuroradiology, 30: 597-607.