Sipple syndrome with pregnancy: Anesthetic and obstetrical implications

Obstetrics is the only specialized medical stream, which is associated with numerous risks to two lives at the same time during pre-, intra- and post-partum period. Among various comorbidities, endocrine pathologies complicating pregnancies can be a huge intimidating task for the attending obstetrician and anesthesiologist. Sipple syndrome, a constellation of endocrine diseases, primarily characterized by the presence of medullary carcinoma thyroid, pheochromocytoma and primary hyperparathyroidism, can give nightmares to obstetrician and the attending anesthesiologist.

A similar challenging scenario is being published in the current issue of the journal. From the successful management of such a case, it seems a privilege and matter of honor that anesthesiologist played a considerable role in conduct of smooth vaginal delivery in such a complicated case for which no definite protocols or guidelines exists in the clinical literature. The literary evidence for designing and implementing safe anesthetic management of such cases can be derived from only few sporadic case reports which certainly cannot be termed as definite therapeutic options.

ENDOCRINE ANESTHESIA: CONTINUOUS SEARCH FOR NEWER THERAPEUTIC OPTIONS

Endocrine anesthesia has made huge advancements in the last few years, but still our knowledge regarding management of rare endocrine disorders is based on analogous reported cases. It is practically and clinically impossible to carry out any observational study considering the rare prevalence of such disorders and also the nonfeasible long duration involved in this type of study. Great clinical skills, experience as well as sound knowledge of the possible obstetric and anesthetic implications are essential to manage these disorders successfully and safely particularly in resource challenged nations. Adding salt to the injury, poor antenatal care is equivalent to inviting a disaster in such complicated pregnancies.

IMPACT ON OBSTETRIC OUTCOME

Multiple endocrine neoplasia (MEN 2A) during pregnancy can be associated with possible life-threatening complications including cardiovascular collapse, myocardial infarction, intracranial bleed, and cardiomyopathy. Adrenergic crisis can prove fatal when MEN 2A is not properly recognized as has been claimed by the authors.

Primary hyperparathyroidism may masquerade obstetrical risks besides anesthetic implications due to raised serum calcium. The fetal risk is directly enhanced by raised serum calcium levels as parathyroid hormone has no regulatory effect on calcium movement through placenta. This challenging clinical scenario can get further exacerbated as it is difficult to estimate the exact serum calcium levels, which are usually decreased due to lower albumin levels (primary binding protein). It is difficult to predict the brutality of complications associated with raised calcium levels as it can prove to be catastrophic leading to hypercalcemic crisis, hyperemesis, tetany, and still birth.

Diagnostic Modalities

Bio-chemical and radiologic investigations can be incalculably helpful not only in accurate diagnosis, but can also play a significant role in decision making during normal vaginal delivery or operative management. Thyroid carcinoma can be evaluated effectively by ultrasound and is a safer investigation during the antenatal period and should be recommended as a supplement to fine-needle aspiration. Advancements in laboratory medicine advocate genetic testing as a better alternative to bio-chemical and radiologic investigations. From the genetic point of view, such syndromes should be diagnosed and analyzed at the molecular level, so as to identify the RET proto-oncogene at chromosome locus 10q11. Besides diagnosing with accurate precision of 98-99%, it also helps in designing the management options before taking up for surgery. Airway examination assumes significance in case of thyroid malignancies and should include radiologic evidence besides clinical evaluation. Preanesthetic evaluation should

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focus on evaluation of sites to where possible metastasis can occur from medullary thyroid cancer, most commonly to lung, liver, and bones.

**SURGICAL OPTIONS, DECISIONS, AND INTERDISCIPLINARY TEAM WORK**

The decision to perform surgery for the endocrinopathies is a difficult one predominantly when the pregnancy is precious. It requires an interdisciplinary team work among obstetrician, endocrinologist and anesthesiologist to proceed appropriately so as to make a sound decision on an individual basis.

Bilateral adrenalectomy is the treatment of choice and should be performed prior to total thyroidectomy.\[5,6\] The controversy surrounds decision making in surgical resection during pregnancy even if the fetal compromise seems imminent. However, during pregnancy surgery can be extremely hazardous and life-threatening both to the mother and the developing fetus due to possible hypertensive crisis, wider fluctuations of hemodynamic parameters, and impact on various organs as well as potential possibility of hypotension during the postoperative period. Therefore, it is advisable to proceed for surgery only after delivery provided that pregnancy is allowed to progress under the cover of α-blockade.\[7\] Decision making for surgical resection is largely based on potential risk factors that can cause hemodynamic instability. These include but are not limited to uncontrolled hypertension even with α-blockade, size of the tumor >4 cm, higher levels of norepinephrine in plasma and profound postural hypotension with α-blockade.\[7\] Before surgery, intravascular volume has to be optimized as the vascular tree demonstrates reduced intravascular volume due to catecholamine induced widespread vasoconstriction.\[7\]

Hypercalcemia can be managed by subtotal parathyroidectomy along with cervical thymectomy.\[8,9\] Ideally, calcitonin should be assessed as a marker for medullary thyroid carcinoma.

**VAGINAL OR OPERATIVE DELIVERY**

Labor can precipitate hypertensive crisis induced by pheochromocytoma and as such cesarean section seems to be the desirable mode of delivery. Taking a cue from the present case report, epidural anesthesia during labor seems to be a justifiable option provided that such cases should be operated immediately if hemodynamic fluctuations become exaggerated during the course of labor. Relief of pain with epidural local anesthetics during labor can be helpful in avoiding the exaggerated metabolic and endocrine response due to pain associated with labor. The main advantage of epidurally induced catheter includes the smooth conversion for operative delivery and provision of postoperative pain relief. Such deliveries; however, require intense monitoring during parturition.

The timing of thyroidectomy surgery; however, remains controversial as this clinical entity usually present with wide spectrum of clinical features.\[3,10\] If the decision of surgery seems essential considering the malignancy of medullary carcinoma of thyroid or symptomatic hypercalcemia, the most suitable period is the second trimester. Considering the possible impact on pregnancy, surgery should be undertaken even if the symptoms of hypercalcemia are milder. However, if no symptoms are present, surgery can be safely deferred until delivery. Stage of medullary carcinoma is a definite predictive factor in surgical decision making. At term, cesarean section is definitely a better option, but the authors have successfully demonstrated painless vaginal delivery with epidural analgesia.\[11\] The clinical and anesthetic management; however, should primarily be planned on case to case basis rather than adopting any rigid technique.

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**REFERENCES**

1. Kronenberg HM. Polyglandular disorders. In: Goldman L, Ausiello D, editors. Cecil Medicine. 24th ed., ch. 239. Philadelphia, Pa: Saunders Elsevier; 2011.
2. Bajwa SS, Kaija S. Endocrine anesthesia: A rapidly evolving anesthesia specialty. Saudi J Anaesth 2014;8:1-3.
3. Wattanachanya L, Bunworasate U, Plengpanich W, Hounggam N, Buranasupkajorn P, Sunthornyothin S, et al. Bilateral pheochromocytoma during the postpartum period. Arch Gynecol Obstet 2009;280:1055-8.
4. McMullen TP, Learoyd DL, Williams DC, Sywak MS, Sidhu SB, Delbridge LW. Hyperparathyroidism in pregnancy: Options for localization and surgical therapy. World J Surg 2010;34:1811-6.
5. American Thyroid Association Guidelines Task Force, Kloos RT, Eng C, Evans DB, Francis GL, Gagel RF, et al. Medullary thyroid cancer: Management guidelines of the American Thyroid Association. Thyroid 2009;19:565-612.
6. Bajwa SS, Bajwa SK. Implications and considerations during pheochromocytoma resection: A challenge to the anesthesiologist. Indian J Endocrinol Metab 2011;15 Suppl 4:S337-44.
7. Kim J, Reutrakul S, Davis DB, Kaplan EL, Refetoff S. Multiple endocrine neoplasia 2A syndrome presenting as peripartum cardiomyopathy due to catecholamine excess. Eur J Endocrinol 2004;151:771-7.
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8. Bajwa SJ, Sehgal V. Anesthetic management of primary hyperparathyroidism: A role rarely noticed and appreciated so far. Indian J Endocrinol Metab 2013;17:235-9.
9. Bajwa SJ. Anesthetic techniques and parathyroid hormone levels: Predictor of surgical decisions. Indian J Endocrinol Metab 2013;17:910-2.
10. Bajwa SJ, Sehgal V. Anesthesia and thyroid surgery: The never ending challenges. Indian J Endocrinol Metab 2013;17:228-34.
11. Nader S. Other endocrine disorders of pregnancy. In: Creasy RK, Resnik R, Iams JD, editors. Maternal Fetal Medicine, Principles and Practice. 5th ed. Philadelphia: Saunders; 2004. p. 1083-107.

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