CASE REPORT

Pheochromocytoma in pregnancy

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ABSTRACT

Pheochromocytoma in pregnancy is a life threatening condition and is very rare. Timely diagnosis, appropriate treatment and team management is necessary for decreasing maternal and fetal morbidity and mortality. A 24year old G2P1L1 with previous full term normal delivery with prior history of right adrenalectomy for right sided pheochromocytoma presented with symptoms of episodic headache, dizziness and sweating. She was diagnosed with left sided pheochromocytoma of 5cm x 2.7cm size during anomaly scan which later was confirmed by laboratory analysis. She was started on alpha-blocker and was carried till full term pregnancy with close monitoring and regular follow up. A healthy neonate was delivered by vaginal delivery with ventouse after induction of labour under epidural analgesia. Patient was stable during labour and post-partum period was uneventful. She was discharged on day 4 of the delivery with continuation of alpha-blocker.

Keywords: Pheochromocytoma, endocrinology, alpha blocker, vaginal delivery, epidural analgesia.

Pheochromocytoma is a rare catecholamine producing tumour causing secondary hypertension. Its incidence is less than 0.2 per 1000 pregnancies but, if untreated both mother and fetus has a risk of mortality by 58%. Its appearance is sporadic but it may be associated with some genetic disorders eg: MEN2A and 2B.¹ During pregnancy pheochromocytoma might not have any specific signs and symptoms. It is less prevalent than other hypertensive disorders during pregnancy. A literature review shows that 90% of pregnant women demonstrate symptoms of pheochromocytoma right before delivery. Thus, this may result in delayed diagnosis, putting the mother and child at risk.² The diagnosis of pheochromocytoma remains a huge challenge faced by clinicians due to its non-specific signs and symptoms and the fact that it mimics pre-eclampsia. The appearance of hypertension can be insidious and patient may even remain asymptomatic till delivery. Maternal and fetal survival greatly depends on time of diagnosis, appropriate medical management and correct timing of delivery and surgery. Antepartum diagnosis and management has reduced maternal mortality and fetal loss significantly.

Case

A 24 years old female gravid 1, para 1 with subclinical hypothyroidism came for regular ANC checkup in OPD at 18weeks of gestation with complaints of episodic headache, dizziness and sweating. She has undergone previous full term vaginal delivery 3yrs back. She had a past history of right sided adrenalectomy 4 years back and it was confirmed on histopathological examination as pheochromocytoma.

Her routine antenatal profile was done which was found to be within normal limit (WNL). She was advised ultrasound abdomen along with anomaly scan which revealed left sided suprarenal mass of 5 X 2.7cm and obstetric scan was WNL (figure 1). Keeping into consideration past history and ultrasound findings her biochemical analysis was done and findings were as follows - 1) Free plasma metanephrines - 32.3pg/ml (12 to 60pg/ml); 2) Free plasma nor-metanephrines-2396 pg/ml (18 to 111pg/ml); 3) Urinary free VMA - 12.70 mg/24hrs (2-7 mg/24hrs); 4) Serum calcitonin-9.54 pg/ml(less than 10pg/ml). Her echocardiography was done which showed good left ventricular function to rule out catecholamine

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induced cardiomyopathy. She was started on alpha-blocker (prazosin) and tablet sobisis (sodium bicarbonate) with team approach including obstetrician, anesthetist, endocrinologist, onco-surgeon and pediatrician and was planned for left sided adrenalectomy but due to certain financial constraints she reached us later in pregnancy. As she had already crossed 24weeks she was planned to carry on pregnancy till term with medical management with due risks explained and informed consent.

Figure 1: Ultrasound abdomen

She was carried on till 36weeks with regular follow up on alpha blocker. Fetal assessment was done using ultrasound and non-stress test at 36weeks, and was planned for induction of labour under epidural analgesia to avoid pain induced hypertensive crisis. A corticosteroid prophylaxis was given 24hrs before induction of labour. Epidural catheter was instilled before induction of labour. Induction of labour was done with misoprostol 25mcg vaginally 2doses 6hrs apart. As soon as patient started perceiving pain her BP rose up to 200/110 mm of Hg. Therefore, epidural top up were given to her at regular intervals. Fetal heart sound was monitored throughout labour. When cervix was fully dilated delivery was done with ventouse in order to avoid pushing which would again trigger hypertensive crisis. A healthy neonate of 2.4kg was delivered. Minimum use of oxytocin (10units) was done to reduce hemodynamic changes such as tachycardia and sudden hypotension. Misoprostol 600mcg was kept per rectally prophylactically for prevention of postpartum hemorrhage. Post-delivery patient was monitored closely with the continuation of alpha blocker and was advised to continue till her surgery was planned. Patient was discharged on day 4 with a healthy neonate.

Discussion

Pheochromocytoma is rare among hypertensive patients especially during pregnancy. Most commonly it occurs in 4th to 5th decade of life in both men and women. It is of sporadic

origin or associated with features of multiple endocrine neoplasia (MEN), Von Hippel-Lindau disease or several other associated syndromes. Etiology is unknown but 25-33% is inherited with germ like mutations. It follows rule of 10, that is 10% extra adrenal, 10% bilateral and 10% malignant.³

Presentation is variable. It may range from adrenal incidentaloma to hypertensive crisis with associated cardiac complications. It classically manifests as paroxysmal attacks of headache, diaphoresis, palpitation, and hypertension. Symptoms may be severe, and patients may present with 'Pheochromocytoma crisis', characterised by multiple organ failures, severe blood pressure variability, high fever, encephalopathy, with resultant cardio metabolic sequelae.⁴ Several factors may trigger clinically overt pheochromocytoma such as increase in intra-abdominal pressure, uterine contraction, and process of delivery, any abdominal surgical intervention or even general anesthesia.

The initial and essential step in diagnosing pheochromocytoma is biochemical confirmation of excessive catecholamine production.⁵ Most sensitive tests are measurements of plasma free metanephrines or urinary fractionated metanephrines^{1, 3-5}. The raised plasma levels of catecholamine helped us to come to a diagnosis. Imaging modalities such as ultrasound and MRI can be used for confirmation of the diagnosis. Ultrasound in our case was suggestive of suprarenal mass and since the patient was not posted for surgery. MRI was not done.

Definitive treatment requires surgical resection of the tumour but there is controversy about appropriate time of surgery.⁶ The optimal timing of surgery is during late 1st trimester or early second trimester before 24weeks either through laparotomy or laparoscopically, though laparoscopy is preferred route.^{5,6} The control of catecholamine production is most important therapeutic measure. It can be best managed medically with alpha blockers such as phenoxybenzamine, prazosin and doxazosin followed by beta blockers several days later to minimize reflex tachycardia.^{6,7} But it should not be started before alpha blockade as unopposed alpha adrenoceptor stimulation can precipitate hypertensive crisis. Phenoxybenzamine has been shown to cross the placenta and cause neonatal hypotension and respiratory depression. Therefore, prazosin was used in our patient. Moderate hydration and liberal salt intake should be there as patients with pheochromocytoma are volume constricted and also to ensure good blood pressure and adequate blood supply to placenta and fetus.^{3,7} Therefore, our

patient was started on sodium bicarbonate tablets and during labour was given continuous intravenous fluids. Magnesium sulphate is beneficial in management of severe pre-eclampsia in order to prevent eclampsia. It inhibits catecholamine release from tumour, blocks peripheral receptors for catecholamine and is a direct vasodilator.⁸ Since our patient's blood pressure was under control, it was not required. The traditional dictum that vaginal delivery is a contradiction in the presence of pheochromocytoma as mortality decreases from 33 to 19% with caesarean section.⁹ However effective alpha blockade has been shown to allow a safe vaginal delivery. Authors suggest that since caesarean section is more controlled mode of delivery it should be preferred but where vaginal delivery is attempted pain and active pushing should be avoided to minimize the risk of tumour stimulation due to raised intraabdominal pressure and pain. This can be achieved with epidural analgesia. So keeping into consideration multiparity status of our patient she was planned for vaginal delivery with induction of labour at 36weeks to avoid tumour compression by gravid uterus. We proceeded with epidural analgesia in our patient with an option of topping up in case of emergency caesarean section. Adrenal gland is innervated by sympathetic nerves from T5 to T12. Epidural blockade would cross these levels which would stop any mechanical or neurogenic stimulation of tumour.⁹ Active pushing can be avoided by decreasing duration of second stage of labour as we did in our case with ventouse application. Three months postpartum she was planned for surgical resection of tumour with continuation of alpha blocker. Surgery was not done as patient did not come for follow up. Since germ line mutations account for it, genetic screening should be considered.

Conclusion

Although pheochromocytoma diagnosed early in pregnancy should be operated, our case demonstrates with the help of multidisciplinary approach surgical removal of tumour was delayed until after vaginal delivery with excellent outcome for mother and baby.

Conflict of interest: None. **Disclaimer:** Nil.

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