PARAGANGLIOMAS, MIMICS OF PREECLAMPSIA IN PREGNANCY: A CASE REPORT

Shobika Sabashan[1] (BPharm(Hons), GradCertPharmPrac)
[1]Mercy Hospital for Women, Heidelberg VIC 3084

Objective: To describe the pharmacological management of a pregnant patient diagnosed with paragangliomas

(*Paragangliomas: Rare catecholamine-secreting tumours often misdiagnosed as preeclampsia in pregnancy leading to medication misadventures*)

Clinical Features:

A 20-year-old pregnant female at 20 weeks gestation was transferred from a regional hospital to a tertiary women's hospital for the treatment of severe hypertension with the highest reading of 218/147 mmHg.

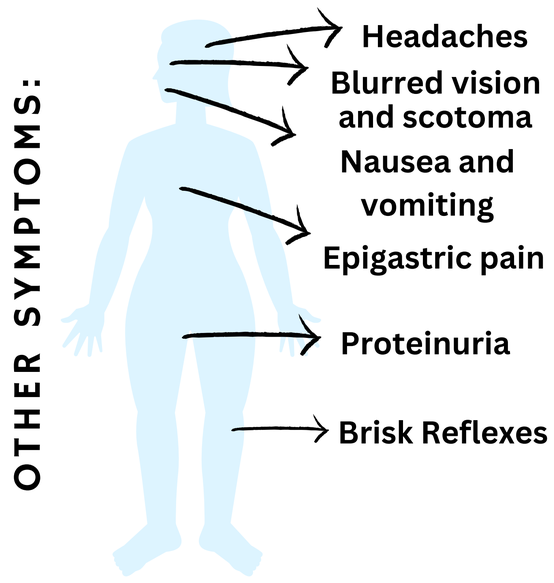
MEDICAL HISTORY

20F G2P0 20+6/40

PMHx:
Asthma (not medicated);
BMI 35

ObHx:
Miscarriage (2020)

MedHx:
Elevit



Initial Diagnosis: Early onset preeclampsia (PET)
Despite treatments usually effective in preeclampsia, blood pressure remained elevated.

Confirmed Diagnosis:
Later, a secondary hypertension screen revealed elevated levels of normetanephrines (catecholamine metabolites) suggestive of a neuroendocrine tumour.

The diagnosis of **two benign paragangliomas** in the abdominal aorta was then confirmed with an MRI and PET scan.

Literature Review:

Paragangliomas are neuroendocrine tumours that hypersecrete catecholamines increasing alpha and beta-adrenergic activity.[1]

The tumours can cause a myriad of symptoms with hypertension being the most prevalent in pregnancy.[2]

Diagnosis of these tumours in pregnancy can be difficult as they are extremely rare (0.0007%)[3], require specific diagnostic tests and have overlapping features with preeclampsia.

Maternal and fetal outcomes are favourable if the tumours are diagnosed and managed prior to conception. Delayed or missed diagnosis increases maternal and fetal mortality rates to 58% and 55% retrospectively.[4]

The treatment of choice for paragangliomas is surgical resection.[5]

To minimise the risk of hypertensive crisis in surgery, careful preoperative pharmacological management is required to block the increased adrenergic activity and control blood pressure.

Figure 1. Preoperative pharmacological management of paragangliomas.[5]

Alpha-blocker →
+ Beta-blocker* → **Once alpha-blockade has been established*
+ Other Antihypertensives →
+ Catecholemine Synthesis Inhibitor*
**metyrosine - very expensive and not available in Australia*

Case Progress, Pharmacist Interventions & Outcomes:

Figure 2. Timeline of patient's medical and surgical management during admission.

Early Admission
Initial diagnosis of PET
Nifedipine SR 30mg BD
Labetalol 200mg TDS
Methyldopa 250mg BD PRN
Magnesium Sulphate Infusions
(*Loading and Maintenance doses*)

Day 8
Post diagnosis of Paragangliomas
Phenoxybenzamine 40mg BD
Phenoxybenazmine 20mg Midi
Amlodipine 5mg daily
Metoprolol 12.5mg BD*
5-days post establishing α-blockade

Day 12
Phenoxybenzamine 40mg TDS
Amlodipine 10mg daily
Metoprolol 25mg mane
Metoprolol 50mg nocte

Day 17
Successful surgical resection of tumours
→ Blood pressure normalised
→ Normetanephrine levels normalised

Day 26
Still born male infant delivered
(24 weeks; 320g)

Labetalol ceased post diagnosis of paragangliomas

Other medicines ceased or recommended to avoid during pharmaceutical reviews

Table 1. Commonly used medicines in pregnancy to use with caution or avoid in patients with Paragangliomas. [6] [7]

	Use in pregnancy	Effect in patients with paragangliomas
Labetalol	Hypertension in pregnancy	May precipitate hypertensive crisis without alpha blockade
Methyldopa	Hypertension in pregnancy	May trigger tumour to hyper-secrete catecholamines at high doses
Metoclopramide	Nausea and vomiting	May trigger tumour to hyper-secrete catecholamines
Betamethasone	Risk of pre-term birth/fetal lung maturation	May increase catecholamine concentration and worsen symptoms
Tramadol	Moderate-severe pain relief	May trigger tumour to hyper-secrete catecholamines
Morphine	Moderate-severe pain relief	May trigger tumour to hyper-secrete catecholamines

Discussion:

- This is an unfortunate case where delayed diagnosis of paragangliomas led to initial medication mismanagement and poor fetal outcome.
- **Lesson Learnt**: The medication mismanagement highlights the importance of understanding the pathophysiology of the tumours to identify potential drug-disease interactions.

Scan me for references