Managing pre-eclampsia

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Pre-eclampsia and its complications remain a leading cause of maternal mortality worldwide. In Australia, pre-eclampsia is the third leading cause of direct maternal death, accounting for almost 18 per cent of such deaths.[1] However, for every maternal death, there are many more cases of both maternal morbidity and perinatal morbidity and mortality from this disease. Prediction and prevention of pre-eclampsia prior to its clinical onset remain elusive goals. Despite variations in time and place in the approaches to pre-eclampsia management, the principles remain the same, with *stabilisation* and timely *delivery* being the only effective treatment.

Stabilisation

Stabilisation of the pre-eclamptic patient first requires the prompt recognition and diagnosis of this condition. While most pre-eclamptic women will present with asymptomatic pregnancy-induced hypertension and proteinuria, caution should be used when assessing pregnant women with vomiting, abdominal pain, headache and generalised malaise, as a diagnosis of an atypical presentation of pre-eclampsia may be overlooked.[2] Monitoring of patients with borderline or mild pre-eclampsia can be undertaken safely in a hospital day-care setting.[3] However, patients with severe hypertension, symptomatic pre-eclampsia or evidence of multi-system organ involvement require in-patient admission.[4]

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Antihypertensive Treatment

Antihypertensive treatment is indicated to prevent the maternal vascular damage associated with severe uncontrolled hypertension.[4] While debate continues regarding the blood pressure at which antihypertensive therapy should be commenced, there is general consensus that blood pressures > 160-170/100-110 warrant treatment. In Australia, methyldopa and labetalol are the two most commonly used oral agents. Both drugs have established safety in pregnancy, although labetalol should be avoided in women with asthma.[4] Nifedipine is increasingly being used, particularly where persistent hypertension demands the addition of a second agent. Atenolol should be avoided during pregnancy due to its association with fetal growth restriction, while ACE inhibitors should also be avoided due to the risk of fetal renal damage.[5]

Acute severe hypertension can be managed with intravenous treatment if oral agents are ineffective.[5] Intravenous hydralazine has been the primary therapeutic agent in Australia for many years in this situation. Intravenous diazoxide has also recently been recommended as a potentially suitable antihypertensive agent in the acute setting.[6]

Seizure Prophylaxis

Magnesium Sulphate is now well established as the agent of choice for prevention of recurrent seizures.[2] Furthermore, the MAGPIE trial has now established the role of magnesium sulphate in the prevention of eclampsia in women at risk.[7] Predicting which pre-eclamptic women will go on to fit, however, is notoriously difficult; and while it is true that the more severe pre-eclamptic women have a greater likelihood of eclampsia, women with comparatively mild or undiagnosed pre-eclampsia can experience a seizure. Thus, while potentially all women with pre-eclampsia may benefit from the preventive effects of magnesium sulphate, only 36 women with imminent eclampsia need to be treated to prevent a single case of eclampsia, whereas in developed countries, 385 women with asymptomatic mild pre-eclampsia would need to be treated to prevent a single seizure.[2]

Given the significant benefits and the relative safety of magnesium sulphate,[4] its use should be considered in the management of all cases of pre-eclampsia. Where magnesium sulphate is administered, a loading dose of 4 g should be given, followed by an infusion of 1 to 2 g/hour.[2, 4] Magnesium sulphate should be continued for at least 24 hours post-partum. Serum magnesium monitoring is only useful as an indicator of magnesium toxicity since there are no established 'therapeutic ranges' for magnesium sulphate.[2] Clinical monitoring for toxicity should be undertaken regularly, with loss of deep tendon reflexes and respiratory depression representing signs of magnesium toxicity. Additional caution should be exercised in the presence of oliguria since magnesium is renally excreted and may accumulate to toxic levels rapidly. In the event of toxicity, the magnesium sulphate infusion should be ceased immediately and calcium gluconate 1 g should be given over ten minutes.[4]

Fluid Balance Management

Fluid balance management is an important aspect of pre-eclampsia management and requires careful monitoring.[4] Acute pulmonary oedema has been a leading cause of pre-eclampsia related maternal mortality in the past and thus fluid restriction is often advocated.

However, fluid restriction in the presence of an epidural and magnesium sulphate mediated vasodilation can lead to impaired placental perfusion, with resultant fetal hypoxaemia and the need for emergency delivery in an unstable patient. Judicious volume replacement, together with careful and experienced assessment of fluid status is essential in managing pre-eclamptic patients.

Delivery

Timing and Mode of Delivery

Timely delivery is the cornerstone of pre-eclampsia management.[4] Delivery should be considered as soon as the patient has been stabilised. However, in cases of very early onset pre-eclampsia (less than 34 weeks gestation) conservative management may be attempted, provided there is appropriate monitoring and relative maintenance of both maternal and fetal well-being.

The presence of pre-eclampsia, or even eclampsia, is not an indication for caesarean section per se. Rather, assessment of the maternal cervical Bishop score and fetal well-being should be undertaken and induction of labour, either with prostaglandins or oxytocin, should be considered.[2, 4] While induction can still be entertained in cases where the gestation is less than 30 weeks, in these situations the cervix is more likely to be unfavourable and a lengthy induction to delivery time is likely to result.[2]

Epidural analgesia is safe and effective in pre-eclampsia in the absence of thrombocytopaenia, while general anaesthetic should be avoided wherever possible due to complications, such as laryngeal oedema and associated risks of failed intubation.[2]

Intramuscular or intravenous Syntocinon should ideally be given for third stage management as Syntometrine and Ergometrine are associated with exacerbation of hypertension.[4]

Postpartum Management

While the cornerstone of pre-eclampsia management is timely delivery, it must be remembered that although pre-eclampsia is cured by delivery, it may not necessarily be cured at delivery. Postpartum monitoring of pre-eclamptic women is essential. Up to 44 per cent of eclampsia cases occur postpartum[4] and in many cases, the women have been normotensive or asymptomatic prior to delivery. Ongoing blood pressure monitoring by general practitioners can assist with determining the timing of antihypertensive medication cessation following delivery and discharge from hospital.

All patients with severe pre-eclampsia (particularly if early gestation at onset) should undergo further investigation at six weeks postnatally to exclude the presence of underlying conditions, such as essential hypertension and renal disease.5

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Pre-eclampsia is a serious and complex disorder which requires careful and conscientious management from experienced clinicians. This condition can be extremely frightening for women and their families and it is essential that women are appropriately counselled regarding their diagnosis, treatment, progress and prognosis. A debriefing consultation once the patient has recovered can also be of value.

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