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EMERGENT CAESARIAN SECTION AND PRE-ECLAMPTIC TOXEMIA- GENERAL VERSUS REGIONAL ANAESTHESIA

Dr. Neena Bhardwaj (Sr. Resident), Dr. Sunanda Gupta (Professor), RNT Medical College,
Udaipur (Raj.).

The eclamptic patients pose an uncommon yet foreboding challenge for the obstetric anaesthesiologist. Selection of regional anaesthesia for severely pre-eclamptic patients requiring caesarian section is still controversial. In this review, we attempt to outline the advantages and disadvantages of various anaesthetic techniques used for severely pre-eclamptic patients undergoing caesarian section.

GENERAL ANAESTHESIA:

General anaesthesia may be required for caesarian delivery in an obtunded patient, when time is not available for the safe administration of epidural block or when coagulopathy contraindicates the use of regional anaesthesia or when regional anaesthesia has failed. General anaesthesia in patients with severe pre-eclampsia presents risk to the mother and baby and as with routine caesarian delivery aspiration prophylaxis and left uterine displacement are essential. Laryngeal oedema is a rare but a potentially serious complication of pre-eclampsia. It often occurs as a part of general oedema and facial swelling but occasionally it occurs with a few warning signs. It is therefore necessary to be prepared for a difficult intubation in these patients, to have a wide range of endotracheal tube and to avoid repeated intubation, as this may worsen the oedema. Laryngeal oedema may develop during the intraoperative period¹, so anaesthetists need to take care when extubating trachea of these patients.

The pressor response to laryngoscopy, intubation and extubation may increase the risks of cerebrovascular accidents, increase myocardial oxygen requirements, induce cardiac arrhythmias, induce pulmonary oedema and reduce uterine blood flow.

Pre-eclamptic patients have decreased levels of pseudocholinesterase. Further, duration of action and sensitivity of succinylcholine and non depolarising neuromuscular blockers may be prolonged in patients on MgSo₄.

REGIONAL ANAESTHESIA:

William's obstetrics² recommended avoiding regional anaesthesia because "of concern for sudden, severe hypotension induced by splanchnic blockade and in turn, the immediate danger from pressor agents and subsequent danger from large volume of aqueous fluid given to correct hypotension so induced". There are several reasons why regional anaesthesia is hypothesized to be risky in this patient population. The severely pre-eclamptic patient's reduced plasma volume is thought to place the patient at unusual risk of hypotension in

response to regional anaesthesia induced splanchnic blockade. In addition reduced uteroplacental perfusion during maternal hypotension may also risk fetal safety. Intravenous fluid administration either prophylactically or as management of hypotension during regional anaesthesia is also thought to place the severely pre-eclamptic patients at unusual risk of iatrogenic pulmonary oedema³. Finally pressor agents such as ephedrine commonly used to manage hypotension after induction of regional anaesthesia are hypothesized to be hazardous to severely pre-eclamptic patients, who may be more sensitive to these agents⁴.

Obstetric anaesthesiologists have cautiously approached the issue of regional anaesthesia in these patients, using primarily epidural anaesthesia in preference to spinal anaesthesia⁵. A common justification for preferring epidural to spinal anaesthesia is the belief that incrementally dosing the epidural catheter increases the epidural sensory blockade in stages and minimises the risk of hypotension. However spinal anaesthesia has the benefit of producing regional anaesthesia more rapidly and some anaesthesiologists believe more reliably compared with epidural anaesthesia⁶.

Hood and Curry (1999)⁷ compared the effects of spinal and epidural anaesthesia for caesarian delivery in severely pre-eclamptic women and concluded that haemodynamic changes were similar in both "single shot" spinal anaesthesia and incremental epidural anaesthesia though it was important to note that the spinal anaesthesia group received 400 ml more crystalloid. Taken together with the results of a previous prospective randomised trial by Wallace et al (1995)⁸, which compared the haemodynamic effects of general, epidural and spinal (combined spinal-epidural) anaesthesia in pre-eclamptic women, it appears that spinal anaesthesia may be used as safely as epidural block when caesarian delivery is necessary in severely pre-eclamptic women.

These findings will be welcomed if applied to at least two clinical situations. First, women with severe pre-eclampsia may require urgent caesarian delivery because of non-reassuring foetal status. Rout et al (1993)⁹ suggested that the relatively small reduction (16%) in the incidence of hypotension with prophylactic crystalloid administration does not necessitate that a fixed volume of fluid be administered before inducing spinal anaesthesia for emergency caesarian delivery. However severe pre-eclampsia usually is associated with varying degree of intravascular volume contraction and it remains to be determined whether severely pre-eclamptic women can forgo a substantial crystalloid preload before spinal anaesthesia without an undue risk of severe hypotension. For that reason the use of spinal anaesthesia in emergency situation, in which it would be of greatest benefit to pre-eclamptic women in avoiding the need of general anaesthesia, may be limited by the time available to pre hydrate the patient. Furthermore, placental abruption, which is frequently associated with hypertensive disease of pregnancy, and the need for emergency caesarian delivery may result in significant maternal hypovolemia caused by retroplacental bleeding.

Second, it is a common belief that regional anaesthesia is relatively contraindicated when the platelet count is fewer than 100,000/mm³. In addition to hypertensive women with pre-eclampsia may also have a reduced quantity and qualitative dysfunction of platelets. Although there are no studies supporting the notion but many anaesthesiologists caring for these patients prefer to choose spinal anaesthesia with a small gauge needle rather than the larger epidural needle.

CONCLUSION

Eclampsia poses a challenge to the anaesthesiologist. Significant morbidity as evidence of multi-system organ impairment may occur requiring acute obstetric and anaesthetic management. Assuming seizure activity is

controlled, intracranial pressure is normal, there is no neurological deficit, foetus is not acutely compromised, maternal haemodynamic stability can be maintained and there is no coagulopathy, then regional anaesthesia by means of a continuous lumbar epidural is the anaesthetic technique of choice. It will prevent maternal hyperventilation, reducing circulating maternal catecholamines, reduce maternal systemic vascular resistance and therefore improve cardiovascular stability, along with increase in uterine artery blood flow and a stable maternal systemic blood pressure.

In case of acute emergency, risk of hypotension with spinal anaesthesia should be weighed against the risk of an airway catastrophe with general anaesthesia. Indeed in the United States between 1985 and 1990, the case fatality rate directly attributed to anaesthesia was approximately 17 times greater with general anaesthesia as compared to regional anaesthesia¹⁰. However the risk may be even greater because general anaesthesia in pre-eclamptic women has it's own particular hazards caused by airway oedema and hypertensive response to laryngoscopy and intubation.

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