Reminder of important clinical lesson

'Miracle baby': an outcome of multidisciplinary approach to neurotrauma in pregnancy

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Summary

Traumatic brain injury (TBI) warranting neurosurgical intervention in the pregnant population is a rarity. We describe a case of a 27-year-old woman who at 13 weeks of gestation presented with multiple traumas having been involved in a near fatal road traffic accident. Glasgow Coma Scale was 6/15. CT brain showed extensive haemorrhagic contusions, diffuse brain swelling and multiple skull and facial fractures. Decompressive craniectomy was performed to control her intracranial pressure during her management in the intensive care. A viable intrauterine pregnancy was confirmed and progressed as maternal stabilisation and rehabilitation continued. At 35+3 weeks a 2770 g male child was delivered via emergency caesarean section after spontaneous onset of labour. The child had no detectable abnormalities and is clinically well. Eight months post-TBI the patient continues to make gradual improvements but is left with severe cognitive impairment and currently undergoing rehabilitation. A multidisciplinary approach was adopted in the management of this patient.

BACKGROUND

Traumatic brain injury (TBI) warranting neurosurgical intervention in the pregnant population is a rarity yet in the injured pregnant population head injury is the most common cause of death. Neurosurgeons should therefore endeavour to manage pregnant patients with head injury and this may include decompressive craniectomy to control raised intracranial pressure. Although maternal wellbeing is of primary concern in the acute management setting, both maternal and fetal health must be considered and balanced in the poststabilisation period to optimise outcomes. This case posed challenges not only from a surgical viewpoint but also for ethical and social reasons.

CASE PRESENTATION

A 27-year-old, 13 weeks pregnant (gravida 3, para 10) woman presented after having involved in a road traffic accident (RTA). She was a restrained front-seat passenger in a car and the driver, her 28-year-old husband, was pronounced dead shortly after arrival to the hospital. Her Glasgow Coma Scale at the scene was 6/15 and she was therefore intubated on arrival to the hospital. Significant facial and skull lacerations were immediately noted on primary survey and haemopneumothorax, dislocation of the elbow and extensive haemorrhagic brain contusions and diffuse brain swelling were also detected on trauma sequence imaging. Bedside ultrasound in the resuscitation room confirmed a viable intrauterine pregnancy.

The patient's history was notable for recurrent early pregnancy loss, epilepsy (seizure free for 2 years prior to presentation) and severe postnatal depression that had previously warranted inpatient psychiatric admission.

INVESTIGATIONS

CT brain showed extensive haemorrhagic contusions, diffuse brain swelling and multiple skull and facial

fractures (figure 1). An intracranial pressure monitor was inserted to detect unacceptable rises. An ultrasound scan was performed which confirmed and dated a viable intrauterine pregnancy (figure 2).

TREATMENT

Decompressive craniectomy was warranted 48 h postpresentation to manage rising intracranial pressures that were

Figure 1 CT brain demonstrating significant cerebral oedema and traumatic skull fracture and temporal contusions.

Figure 2 Uterine ultrasound at admission demonstrating the fetus.

unresponsive to medical management (figure 3). The intracranial pressures improved but she remained intubated in the intensive care unit for 19 more days. Early input from paraclinical specialities including physiotherapy, occupational therapy and speech and language therapy were then required. A percutaneous gastrostomy feeding tube was sited at 20 weeks gestation without complication and subsequent nutritional needs were met with this.

Behavioural issues post-traumatic head injury became a major impediment to rehabilitation and the liaison psychiatry services became involved in care. Social work was also involved from an early stage to liaise with a family bereft of a father, with a seriously ill and pregnant mother and two young children to manage.

Figure 3 CT Brain post bilateral decompressive craniectomy.

Figure 4 Abdominal ultrasound at ninth month of pregnancy demonstrating foetal viability.

Weekly ultrasounds to monitor fetal wellbeing were undertaken—sometimes requiring patient sedation as she vigorously resisted direct physical contact (figure 4). The pregnancy continued without major complication.

OUTCOME AND FOLLOW-UP

At 35+3 weeks a 2770 g male child was delivered via emergency caesarean section after spontaneous onset of labour. (The patient had two previous caesarean sections and was not a candidate for vaginal delivery.) The child had no detectable abnormalities and is clinically well. He was discharged to the care of his grandparents.

Eight months post-TBI the patient continues to make gradual improvements but is left with severe cognitive impairment. Her rehabilitation is ongoing with input from physiotherapy, occupational therapy, speech and language therapy and psychiatry. Disability Rating Scale score for the patient is 21/29 indicating extremely severe disability. She is awaiting cranioplasty to cover the cranial defect.

DISCUSSION

Good fetal outcomes following aggressive maternal management from a neurosurgical viewpoint, even in cases of maternal brain death, have been reported in the literature on numerous occasions.^{1–3} However, the complex ethical issues surrounding balancing aggressive maternal management and ultimate anticipated maternal and fetal quality of life are becoming increasingly topical as our initial management improves.¹

A recent study has shown good outcome in a young woman in her second trimester who was successfully managed by decompressive craniectomy. Our case is the first documented case of neurotrauma in a woman in her first trimester that had a good clinical outcome with aggressive multimodality management. One may expect poor viability in the early pregnancy with significant polytrauma and this case as an exception has demonstrated the spectrum of patient needs from the time of admission in a tertiary care setting till the delivery of the baby.

Neurocognitive issues and psychological problems must be anticipated and family counselling is essential in the addressing the needs of the new born. As this patient lost

her husband in the RTA, the social issues were more complex needing input from social and childcare support.

Learning points

- ▶ Neurotrauma in pregnancy requires management in a tertiary care centre with multidisciplinary input.
- ▶ Aggressive initial neurosurgical treatment has proved beneficial in the optimal management of both the fetus and the mother as demonstrated in our case.
- ▶ Traumatic brain injury patients in this circumstance need long-term care and one should anticipate the needs of both the child and the mother.

Competing interests None.

Patient consent Obtained.

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