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Case No. 4 - Anoxic Encephalopathy Associated with a "High Spinal" Affect during Cesarean Delivery

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CASE NO. 4

ANOXIC ENCEPHALOPATHY ASSOCIATED WITH A
"HIGH SPINAL" AFFECT DURING CESAREAN DELIVERY

Jane Martin, age 38, enrolled at the General Hospital for pregnancy care. On March 18, 2010 at 5:13 a.m. the pregnancy proceeded until term (37 weeks and 5 days) when Jane presented to the hospital Labor and Delivery Triage Unit with a history of contractions since 12:30 a.m. which contractions were then occurring every 3 to 4 minutes with the bag of waters intact.

The pregnancy history involved a cooperative patient who reported early for pregnancy care. Her husband was supportive and the prenatal interval revealed no complications. Triage evaluation revealed that the cervix was 4 cm. dilated and 50% effaced; the fetus was VTX at -3 station; Jane reported that she continued to feel active fetal movement; and fetal heart rate information was "normal" and "reassuring."

The plan was to admit Jane to a labor room for "expectant management." At 10:01 a.m., resident OB, Dr. Kent, documented a discussion with an attending OB in which they anticipated vaginal delivery. At 1:00 p.m., attending OB, Dr. Peters documented that the cervix was 7 cms; the station was -2; and the plan was to continue "current management."

The following notes appear:

- 1300 [1:00 p.m.]: epidural placed in sitting position
(Combined spinal/epidural, intrathecal
Fentanyl 15 mcg)
- 1305 [1:05 p.m.]: nurses entry "epidural anesthesia
continues."
- 1320 [1:20 P.M.]: nurses entry "epidural anesthesia
successful."

A 3:15 p.m. note by attending OB Dr. Peters documents that "after epidural" patient resting comfortably and the plan was discussed with resident OB, Dr. Kent who was to continue close observation.

A 3:54 p.m. note by Dr. Peters documents that contractions were every 2 to 3 minutes, the fetal heart was "reassuring"; and

the plan discussed with resident OB, Dr. Kent who was to continue expectant management.

At 5:37 p.m., Dr. Peters documented that despite adequate contractions and AROM, there was no progression in cervical dilation.

There was an exam at 5:45 p.m. (7 cm./-1 station) and the note reflects the patient was counseled in great detail about continued medical management vs. primary cesarean delivery.

According to the note, Jane was counseled in "great detail" about the risks of continuing labor and Jane initially desired to shut off the epidural and to wait to see if that step would aid in labor progress and thereby allow vaginal delivery. The note states that Jane was asked to and did sign a "refusal of treatment form."

At 6:10 p.m., Dr. Peters documented an addendum note that Jane now desired Cesarean delivery. This addendum note states that Jane was advised of the risks of the Cesarean including "anesthesia complications."

There is no contemporaneous documentation in any of the obstetrical or nursing notes that there was any difficulty with the epidural in obtaining adequate pain relief or that the epidural was having any "patchy" effects.

However, an anesthesia attending note by Dr. Morgan timed at 6:23 p.m. reflects that a SAB (subarachnoid block) would be used "due to patchy epidural." Jane Martin was taken to the operating room at 6:30 p.m., and the fetal heart monitor was discontinued at that time.

The anesthesia record shows that the maternal monitoring by the anesthesiologist began at 1835 (6:35 p.m). The record reflects that a SAB was done at 1855 (6:55 p.m.) after removal of an intact epidural catheter but does not show when or how the patient was positioned for spinal anesthesia nor does it indicate any specifics after spinal anesthesia was completed.

Monitoring Data Notes Reveal:

1855: SAB
1900: 100/38-105/40

1905: skin incision: 120/48
1910: bradycardia and hypotension: BP 50/20, P42; 1 mg.
epinephrine
1915: delivery of newborn; 60/18
1916: Epinephrine 1 mg and phenylaphrine 100 mcg x5 ml.
1920: Intubation - "easy intubation." Bicarbonate 50 ml x2.
Blood pressure came up: 60/18
1925: 88/25
1930: 90/30
1950: Diastolic >50

According to the Cesarean Operative Report on "entering the uterus - very dark blood was noted" and the anesthesiologist then diagnosed a high spinal and severe hypotension. According to the anesthesia record, the maternal pulse oximeter showed a persistent O₂ saturation of 100%.

An obstetrical note reflects that the baby (Michael Martin) was "quickly delivered" and "handed off to the pediatricians." However, the pediatric notes reveal that when the pediatricians arrived in the OR, the newborn already was on a radiant warmer with no spontaneous movements and no respiratory effort. The newborn's initial oxygen saturation was 78%, but following newborn resuscitation that included newborn intubation, his oxygen saturation pick up to greater than 90%. An umbilical cord blood gas (pH 6.816) confirmed that Michael Martin became acidotic from lack of oxygen prior to his birth.

Fortunately, Michael Martin recovered without residual deficit. Jane Martin's heart rate and blood pressure eventually recovered following the intubation and resuscitation.

A post event anesthesia note written by attending anesthesiologist, Dr. Morgan, states that patient had an epidural that was not working, so C/S plan to do under SAB. After skin incision, patient developed a total spinal.

A different post event anesthesia note by Dr. Morgan states "status post C/S under SAB with high spinal. Remains intubated and unresponsive, most likely etiology anoxic ischemic encephalopathy as per neurology."

When the medication used to induce spinal anesthesia travels higher than intended within the spinal cord, a condition referred to as high neural blockade, high spinal block or total spinal

exists. This condition can produce difficulty in breathing, hypoxia, hypotension and bradycardia. Hypotension may be treated with volume infusion and vasopressors. Bradycardia may be treated with atropine or ephedrine. Prevention of cardiac arrest due to hypoxia and hypotension is by adequate ventilation and vasopressors. When dosing a spinal, it is important to monitor VSs and block level.