

Anaesthesia for the HIV-positive parturient

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Introduction

Some diseases have become so common in our practice that they tend to pass by unnoticed, after a while. HIV infection is one of these. While most HIV-positive patients cause us no reason for concern, a regular revisiting of some of disease-related issues is certainly worthwhile.

Parturients are a fascinating group: seemingly young and healthy women present for procedures that aren't even necessary as a result of pathology, and robust physiology aids them in passing through our hands relatively unscathed. However, when unusual things start happening, this sense of security can vanish frighteningly quickly.

Women of reproductive age are routinely found to have the highest prevalence of HIV infection, perhaps for obvious reasons. At Chris Hani Baragwanath Hospital, 34% of women presenting for pregnancy-related procedures are HIV-positive. Our labour ward is possibly the busiest in the country, with 70 deliveries taking place every day, and about 650 caesarean sections being done every month. Add to this the monthly performance of about 200 minor procedures in early pregnancy, and the importance of understanding the ins and outs of HIV infection in the obstetric population becomes ever more apparent.

Physiology of pregnancy meets pathophysiology of HIV infection

Pregnancy is a complex process, and understanding (and remembering) all the changes that take place over the 9 month period is something about which only exam candidates can ever boast.

Briefly, the major organ systems of concern are the following:

Cardiovascular system: A progressive increase in cardiac output requires a healthy heart, and the greatest rate of change occurs by around 24 weeks of gestation. In general, if a parturient has sailed through her second trimester, it is unlikely that she will have too many problems in her third, and a carefully thought out delivery plan should usually provide her with a safe passage into motherhood.

Cardiovascular compromise in HIV-positive patients is not uncommon. This occurs frequently because of an underlying cardiomyopathy, pulmonary hypertension, or an unrelated undiagnosed pathology, such as valvular heart disease. Care should be taken to properly assess an individual with effort intolerance, undue peripheral oedema, and inexplicable murmurs.

Respiratory system: A pregnant woman needs more and more oxygen delivery as her developing baby grows. Naturally, physiology obliges by increasing the supply; however, the situation becomes complicated in the third trimester as abdominal pressure compromises the functional residual capacity (FRC). The pregnant airway is always cause for anxiety, and a full stomach, a tricky airway and a decreased FRC can make for an exciting morning! HIV infection can affect the airway in several ways, possibly the most unnerving being the presence of friable, vascular Kaposi's sarcoma in the pharynx. Lymphadenopathy and buccal lesions can distort the view at laryngoscopy, as well.

Respiratory compromise is by far the most common manifestation of ill health in these women. Infections are common, and often do not yield substantial clinical signs. Basic examination for features of distress (often only tachypnoea) is mandatory, and blood gas analysis is a very useful tool if unanswered questions remain.

Haematological system: As in any stressful period, pregnancy is a hypercoagulable state. However, this is difficult to measure, as numbers are often difficult to interpret, due to, for example, eg dilutional thrombocytopenia. Any surgery will compound this, and the puerperium is a time during which getting the coagulation balance right is imperative.

Haematological complications are also common with HIV infection. Although it is a generally hypercoagulable state, platelet numbers can fall. However, the overall impact is not clearly defined. The puerperium requires vigilance for clotting abnormalities.

HIV infection itself can have even more complex effects. Individuals can be fit and healthy, or seemingly fit but actually unhealthy, or obviously in trouble. Well patients give no real cause for concern in terms of their own wellbeing through pregnancy. The obviously ill parturient can usually be managed safely using a methodical and systematic approach, as with any other unwell patient, bearing in mind also the physiological changes specific to the patient's gestation.

The tricky group (and the one that usually catches us out) is the group with covert pathology. Careful attention to "red flags" helps, and it is important not to normalise abnormal findings as merely "pregnancy-related".

Management of HIV during pregnancy

The management of HIV involves a several-pronged approach, including the maintenance of general health, the treatment of associated

conditions, and the administration of highly active antiretroviral treatment (HAART), when appropriate). Many drugs require adjustment or even substitution during pregnancy and, in general, the situation can be confusing for the anaesthetist on the red line.

According to the new guidelines, HAART should be initiated in all parturients that qualify, regardless of their gestation. The complexity that having HAART on board poses may seem overwhelming, but this usually does not present too much of a clinical problem. Again, vigilance about unanswered questions is required. Life-threatening complications such as pancreatitis, hepatitis and lactic acidosis, while infrequent, should be managed as soon as possible, and should not only be discovered on the table.

Unfortunately, the pre-HAART era of prevention of mother to child transmission (PMTCT) has left a legacy of doctors focussing on the wellbeing of the baby, and often forgetting about the wellbeing of the mother. PMTCT is now only indicated in HIV-positive pregnant women that do not qualify for HAART. Zidovudine should be initiated at 28 weeks, although the trend is to do so at 14 weeks now. Peridelivery nevirapine is also added, and given to the baby the following day. Mothers should be encouraged to attend follow-up clinics themselves, and should not just be told to "worry about the new baby".

Early pregnancy

Parturients present at various intervals for anaesthesia. HIV-positive individuals may be at higher risk of complicating following interventions. Importantly, termination of pregnancy may initiate sepsis or bleeding. There may be significant temptation to "gloss over" pathology prior to a short procedure, but this should be avoided. Care should be taken with the administration of oxytocics, and the use of the lithotomy position, in parturients with cardiovascular compromise, and careful examination of the airway and respiratory system should take place, regardless of the pressures surrounding a full theatre list.

Delivery

There are very few reasons why an HIV-positive parturient should not be allowed to go into spontaneous labour and deliver vaginally. Similarly, caesarean section for these women should follow the same process as with any other pregnant woman.

Epidural analgesia is appropriate in any woman who has a normal clotting profile, and spinal anaesthesia has conclusively been shown to be safe. General anaesthesia will pose the same airway risk as in any other pregnant patient and, if there is an indication for it, should be provided safely.

Care needs to be taken in parturients with overt or covert pathology. Ventilating anyone with pulmonary hypertension is not for the faint-hearted, and general anaesthesia in a woman with abnormal cardiology has obvious repercussions. On the other hand, a single-shot spinal is certainly not always safe in many patients, especially if the level ends up higher than expected. A graded epidural can cover many bases, but coagulation needs to be considered, and a lot of patience is required to make sure peripheral vasodilation is compensated for as the block progresses.

The expected cardiovascular changes during both spontaneous vaginal delivery and caesarean section are frequently overlooked. Anticipation and prevention of potential events can make progress a lot smoother.

As with all parturients, the following questions should be considered:

- Can this individual manage the pain of labour?
- Can this individual manage the Valsalva effects of bearing down?
- Can this individual manage blood loss?
- Can this individual manage the pharmacodynamic effects of different methods of anaesthesia?
- Can this individual manage the effects of Syntocinon®?
- Can this individual manage the effects of autotransfusion?
- Can this individual manage the effects of postoperative pain?

In general, the most neglected stage of delivery is after the baby has been born. Syntocinon® is often given in large doses, as a bolus, and this may tip borderline physiology into pathology, with dramatic consequences. Once the excitement of delivery is over, the parturient is left to recover with little observation, and the effects of autotransfusion and postoperative pain are often ignored. The manifestations of HIV-related disease may all impact on the individual's ability to deliver her baby safely.

Care should be taken by all health care professionals to ensure their own safety, as well as the safety of colleagues. Universal precautions to prevent the transmission of HIV are better adhered to if the status of the individual in question is known, and regular reminders of safety issues are helpful.

The puerperium

This is certainly an emotional time, and the new baby is often generates a lot more interest than the exhausted mother. HIV-positive women are usually primarily concerned with avoiding the transmission of the virus to the child, and doctors tend to follow suit.

The physiological changes of pregnancy take about 4 - 6 weeks to resolve. Immediately after delivery, complications such as ongoing bleeding, fluid mobilisation, poorly managed pain and hypercoagulability should be actively sought and managed. HIV-positive women should not breastfeed, and should continue with all their medications as normal.

Pregnancy may affect the natural history of HIV infection in various ways. The tendency is for the CD4 count to drop slightly, or even significantly, especially if the pregnancy and/or delivery has complicated. During the puerperium, a mother with AIDS may deteriorate significantly. She should be considered for monitoring in a high-care environment for at least a few days.

Summary

Both pregnancy and HIV infection are complex, and the juxtaposition of the two can create interesting scenarios for the anaesthetist. Recognition of covert pathology should lead to the appropriate planning required for safe anaesthesia, and the puerperium is a period that should not be neglected in these women.