Clinical Application of Genetic Detection and Counseling

IT IS NOW RECOGNIZED that 7 percent of all conceptuses have chromosomal errors; most are aborted. The incidence of chromosomal errors in newborns is 0.5 percent but they produce recognizable phenotypic changes in fewer than half of the cases. Quinacrine staining of chromosomes allows identification of Y chromosome not only in mitosis but in all cells. It is imperative that this technique and the rapid Giemsa banding technique be employed in all chromosome studies. It allows specific identification of all elements and detects rearrangements not visible before. Its application is important in evaluation of habitual aborters (6 to 10 percent of husbands or wives are abnormal), of unexplained infertility patients, and of repeated congenital anomalies. In my opinion all semen donors should be karyotyped. Amniotic fluid analysis is now successful in 95 percent between 14 and 16 weeks of gestation. Numerous centers will assist in analysis and counseling for chromosomal and genetic errors.

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REFERENCE

Hamerton JL: Human Cytogenetics—2 Vols. New York, Academic Press, 1971

Important Advances in Paracervical Block Anesthesia

SHOULD PARACERVICAL BLOCK (PCB) anesthesia be banned? Recently, the Food and Drug Administration considered and then decided against this extreme action. Despite a growing number of reports regarding the fetal hazards of paracervical block, this easily administered anesthetic remains popular and often useful.

Fetal bradycardia is the most common complication, occurring in 20 to 30 percent of patients. Bradycardia usually develops within 2 to 10 minutes and lasts from 3 to 20 minutes. When bradycardia occurs, fetal acidosis and high fetal blood levels of local anesthetics are found. Increased uterine activity has also been reported by some authors.

There is evidence that local anesthetics are the direct cause of bradycardia:

1. Local anesthetics administered intravenously to the mother can produce fetal bradycardia with no accompanying maternal hypotension or acid-base changes.

2. Increasing the dosage of local anesthetic can increase the likelihood and severity of bradycardia.

3. Using a less toxic local anesthetic (propitocaine) can result in a lower incidence and shorter period of fetal bradycardia.

We have postulated that in 20 to 30 percent of patients undergoing PCB, local anesthetic reaches the fetus in unusually high concentrations via diffusion across the uterine arterial walls. This results in transient fetal bradycardia, decreased cardiac output, hypoxia and metabolic acidosis. On the other hand, some investigators have questioned this etiologic postulation for bradycardia and acidosis. They have found that local anesthetics, when injected directly into the (human anencephalic) fetus in huge amounts, do not produce fetal bradycardia nor the same EKG changes as those found during PCB-bradycardia. Fetal EKG changes during PCB-bradycardia are very similar to those found during fetal asphyxia. Consequently, those workers postulate that the local anesthetic compromises uterine blood flow, either directly by uterine vasoconstriction or indirectly by uterine muscle hyperactivity which results in fetal hypoxia and bradycardia.

While the precise cause of fetal bradycardia may be controversial, the significance is not. PCB-bradycardia indicates fetal distress. Increased neonatal morbidity and indeed mortality occurs when bradycardia follows PCB. Currently, American and European medical journals contain reports of 50 perinatal deaths associated with PCB.

Because of the potential fetal and neonatal hazards of PCB, we believe that this technique should not be used in cases of utero-placental insufficiency or prematurity or where there is pre-existing fetal distress. There may be exceptions if other anesthetic techniques are contraindicated or pose a greater hazard to the mother or fetus.

When the technique is used, drug dosage must be kept to a minimum. The fetal heart rate should be carefully monitored for 30 minutes after PCB. One must be prepared to treat neonatal depression with oxygen, positive pressure ventilation, and bicarbonate administration if fetal bradycardia develops after the block.

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REFERENCES

Shnider SM, Asling JH, Holl JW, et al: Paracervical block anesthesia in obstetrics—I: Fetal complications and neonatal morbidity. Am J Obstet Gynecol 107:619-625, June 15, 1970

Teramo K: Effects of paracervical blockade on the fetus. Acta Obstet Gynecol Scand Suppl 16:6-55, 1971