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Title : A NEW NEUROLOGIC AND ADAPTIVE CAPACITY SCORING SYSTEM FOR EVALUATING OBSTETRIC MEDICATIONS IN FULL-TERM NEWBORNS

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INTRODUCTION. The Committee on Drugs of the American Academy of Pediatrics has recommended that during labor only drugs that have the least effect on the neonate, as determined by neurobehavioral testing, be used. In addition, the current guidelines from the Food and Drug Administration for clinical investigation of general and local anesthetics recommend, and in the future will probably require, the use of neonatal neurobehavioral studies for drugs under consideration for use in obstetrical patients. A variety of examinations are currently available for evaluating the neurobehavior of the newborn. These exams are often difficult and time-consuming to perform, require extensive training of the examiners, and produce results that may be difficult to interpret. Our study compares a new neurologic exam for full-term neonates that was recently developed by Amiel-Tison, Barrier, and Shnider (ABS),¹ with the Scanlon Early Neonatal Neurobehavioral Scale (ENNS),² the most widely used test for evaluating effects of obstetric medication on the neonate. The ABS score was designed to detect and differentiate between CNS depression from drugs, birth trauma, and perinatal asphyxia. The ABS test is based on 20 criteria, each of which is given a score of 0, 1, or 2. These criteria assess five general areas: 1) adaptive capacity; 2) passive tone; 3) active tone; 4) primary reflexes; and 5) alertness, crying, and motor activity (general observations). In contrast to the ENNS, the ABS puts more emphasis on motor tone, avoids noxious stimuli (pinprick, repeated Moro examinations), and provides for any given baby a single number that immediately identifies a depressed or vigorous neonate.

METHODS. Sixty-one infants* were examined 15 min after vaginal delivery with the ABS, and at 2 and 24 hr after birth with both the ABS and the ENNS. The mothers had received a variety of obstetric medications including narcotics and sedatives, pudendal block, and local inhalational analgesia. Each examination was scored simultaneously and independently by

*Informed consent was obtained after approval from the Committee on Human Research.

two separate observers who were unaware of the analgesia given. The exam at 15 min was performed in the delivery room; at 2 hr, in the well-baby nursery; and at 24 hr, at the mother's bedside.

RESULTS. Inter-observer Reliability: The 61 babies received 183 ABS exams and 122 ENNS exams. This produced 3660 joint observations for the ABS and 2074 joint observations for the ENNS. The inter-observer reliability was 93 per cent for the ABS and 88 per cent for the ENNS. Duration of Examination: The length of time necessary to perform the examination was significantly less for the ABS examination, the average (\pm SE) being 4.4 ± 0.11 min for the ABS exam and 7.2 ± 0.12 min for the ENNS. Correlation of Results of ABS and ENNS Exams: Since both tests evaluate many identical variables such as tone, primary reflexes, and response decrement; and since each test was performed minutes apart on a given baby, it is not surprising that we found a good correlation between the results of the ABS and ENNS exams. Of the examinations in which infants scored high in the ABS, 92 per cent scored equally well with the ENNS.

CONCLUSION. We believe that the ABS score has distinct advantages over the ENNS and other methods of evaluating the newborn. The ABS is easily and quickly performed, has high inter-observer reliability, avoids the use of noxious stimuli, and has easily communicated results. The greater emphasis on motor tone in the ABS should be especially helpful in detecting drug effects.

REFERENCES

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2. Scanlon JW, Brown WU Jr, Weiss JB, et al: Neurobehavioral responses of newborn infants after maternal epidural anesthesia. *Anesthesiology* 40:121-128, 1974