forts of UNICEF and Ministry of Health with regards to strengthening of existing maternal health services.

L14

FETAL OXYGEN PULSE OXIMETRY: PRELIMINARY DATA

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The monitoring of fetal oxygen saturation (Sat O2) has been conceived to improve the surveillance of fetal conditions as a complement to FHR tracing (CTG). We have tested this method in our Institute in pregnant women, in order to validate the efficacy of pulse oxymetry. Normal term pregnancies were considered with the following inclusion criteria: at least three ultrasound scans in pregnancy for the confirmation of gestational age and placental situation, spontaneous labor and not assuming medicines able to influence the results of the analysis.
The average of the gestational age at birth has been of 40.3 ± 1.0 (39-42 weeks), the average of the neonatal weight has been of 3468 ± 163 g. We have used for this study the fetal oxygen monitor OBS-500 (OB Scientific, Inc.), a compact pulse oxymetry device that appraises in contemporary the signal of the Sat O2 and the fetal cardiac frequency by means of a flexible sensor (OBS-900) situated on the shoulder of the fetus during labor. Umbilical cord blood sampling was obtained at birth after double clamping and before the first neonatal breath and subsequently performed the umbilical blood gas analysis (UBGA) of the artery and the umbilical vein.
We have inserted the probe to laboring women, when the cervix showed a dilation between 4 and 8 cm (average 6.6 ± 2.2 cm). In one case the probe has been inserted with entire membranes, under ultrasound guide (for checking placental situation). The average of the umbilical artery pH has been of 7.28 ± 0.06, and of the umbilical artery pO2 15.4 ± 3.4 mmHg. The average of the values of Sat O2 to 5, 10 and 15 minutes from birth were 50.0, 55.0 and 51.1 respectively. The median of Apgar scores to 1 and 5 min has been respectively 8 and 9.
From our data it emerges that a value of Sat O2 > 50 corresponds to an Apgar score and to UBGA values at birth within normality.
These are preliminary results to ascertain the reliability of the method in one cluster of normal pregnancies at term. A harvest of cases is in progress including alterations of CTG tracing in labor, with the aim to evaluate the utility of pulse oxymetry in the decision of "timing" and modalities of birth.

L16

ROUTINE ULTRASOUND IN THE SECOND TRIMESTER

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Historically, first attempts on fetal screening were held on Northern Europe in 70's. Ultrasonographic evaluation of the pregnancy has advanced rapidly in the past decades. However, the routine use of ultrasound in the second trimester of pregnancy was controversial. In addition, indications, timing and quality of machine were the main debates. In 80's and early 90's, routine use of the ultrasound was not recommended especially in western countries because of lack of evidence on the improvement of perinatal outcome. While there are still great differences on the detection of fetal anomalies because of the skill of the operator and quality of the machine, routine use of ultrasonography is now well-accepted as a standard obstetrical care in many centers around the world.
Not only verification of gestational age and viability, but also investigation for entire fetal anatomy should be done. Other main purposes of the ultrasound screening are to allow timing and transporting to referral center for delivery, alternative options, for antenatal and/or postnatal therapy.
Principles of investigation consist cardiac activity, number of fetuses and presentation, amniotic fluid volume, placental localization and structure, measurements of BPD, HC, AC and FL, examination of the

myometrium, adnexa and cervical canal and finally fetal anatomy. Examination of fetal anatomy is not an option, but should be a standard. Absence of a normal system or organ, presence of an extra structure, herniation from a defect, dilation behind an obstruction, abnormal biometry, lack of fetal movements are the alarming signs. In addition, soft markers of aneuploidy should be investigated in the second trimester of pregnancy.
Finally, screening programs which are predictive and highly specific may reassure some parents falsely or make them anxious leading to invasive procedures. Such programs may also be subject of malpractice. Cost effectiveness and educational problems for these screening programs are still subjects of debate.

L19

FETAL INTERVENTIONS

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Invasive fetal diagnosis includes techniques such as amniocentesis, chorionic villus sampling, fetal blood sampling, fetal tissue sampling, embryoscopy and fetoscopy. The specimens are obtained directly from the fetus or indirectly from an associated fetal structure or product by needle or biopsy technique, allowing assessment of specific fetal characteristics.
Amniocentesis is a second trimester prenatal diagnostic procedure usually performed after 14 weeks gestation. The indications for amniocentesis include advanced maternal age, history of a previous child with a chromosomal abnormality, parental chromosomal translocations, history of specific biochemical or molecular genetic diseases, fetal infections. The technique is performed under ultrasound guidance with a 20-22 gauge needle and amniotic fluid is removed 1 ml per week. The risks of amniocentesis include fetal loss about 1 in 200, leakage and fetal injury (1). Some centers performs early amniocentesis at 10-14 weeks of gestation, but the risk of fetal loss is high compared to chronic villus sampling at the same gestational age. The karyotyping results can result in 15-20 days. Chronic villus sampling can be performed after 10 weeks of gestation. Indications are same as amniocentesis. Single or double needle technique can be used to make needle biopsy. After sampling it has to be done separation from the maternal cells and clots. It has same fetal loss rate compared to second-trimester amniocentesis and disadvantages such as mosaicism, maternal contamination and takes time for separation (2). It's advantages are early procedure and early direct results obtained. If chorionic villus sampling is performed before 10 weeks of gestation there is a high risk for limb reduction(3). Amniocentesis or chorionic villus sampling can be preferred depends on which specific disease studied on. Fetal blood sampling can be utilized to obtain fetal blood from the umbilical cord usually from 18 weeks gestation until term. Fetal karyotyping by fetal blood sampling may be indicative when congenital malformations or early IUGR are identified by ultrasound or when the pregnant with high risk for chromosomal abnormality comes to hospital at late stage. Evaluation of fetal status regarding fetal infections, hematological abnormalities, maternal platelet disorders, inborn errors of metabolism and fetal well-being can be performed (4). Karyotyping results can be obtained within few days. Complications rate is nearly same as compared to amniocentesis or chorionic villus sampling in experienced hand.
Other fetal tissue sampling include fetal skin, liver and fluid collections in fetal urinary tract, thorax or cystic hygroma. Techniques are similar to free-hand ultrasound guided techniques like amniocentesis and fetal blood sampling. Needle insertion into specific fetal areas requires appropriate fetal positioning. Risks and complications are similar to those quoted for fetal blood sampling.
Invasive Fetal Therapy includes amnio-infusion, amnio-drainage, laser ablation in twin to twin transfusion syndrome, fetal fluid drainage such as urine, ascites, hydrothorax, hydronephrosis, fetal shunting procedures, fetoscopic catheterisation, intrauterine transfusion. In severe erythroblastosis fetalis intrauterine washed red cell is carried out to prevent fetal anemia and it's complications. It can be performed by either intraperitoneal or intravascular route. Intravascular transfusion is more effective than intraperitoenal route (5). In case of unilateral or bilateral pleural effusion the shunting is necessary to prevent the fetus from the lung hypoplasia and other complications until term. Vesico-amniotic shunt is another shunting procedure in the case with Posterior-Urethral Valve syndrome as early as possible before nephrogenic