



Perinatal Gazette

Newsletter of the Regional Perinatal Center
Westchester Medical Center



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Welcome to our New Medical Staff

Liver Transplant and Hepatobiliary Surgeon - Dr. Michael R. Marvin is an Assistant Professor of Surgery at NYMC and an attending surgeon at WMC. He went to medical school at Columbia College of Physicians & Surgeons in NY (graduated 1992). He then performed his general surgery internship, residency and transplant fellowship at New York Presbyterian Hospital – Columbia Presbyterian Medical Center, where he trained in pediatric and adult liver and kidney transplantation. To schedule an appointment, please call (914) 493-8916.

Neonatology - Dr. Boriana Parvez has joined the department of neonatology; she trained at SUNY/Stony Brook and has been a faculty at the Hospital for Sick Children in Toronto for the last 5 years. Dr. Parvez has a particular area of interest in the management of infants with short bowel syndrome.

Neonatology - Dr. Muhammad Zia has joined the department of neonatology; he trained at Brookdale University Hospital and Medical Center and did his fellowship in neonatology at the Regional Neonatal center.

Pediatric Neurology - Dr. Shahid Parvez has joined the department as a pediatric neurologist. He trained at SUNY/Stony Brook and was a faculty at The Hospital for Sick Children in Toronto. Dr. Parvez specializes in the management of epilepsy and consults in epilepsy surgery. He is available for inpatient and outpatient clinic services, for consultations and readings of EEG's. Dr. Parvez will be seeing outpatients at the Medical Atrium on Bradhurst Avenue and at Orange County Specialty Center, 100 Crystal Run Rd. in Middletown on a weekly basis. To schedule an appointment, please call (914) 594-4864.

Contemporary Management of RH Isoimmunization

Rhesus isoimmunization occurs when the immune system of a D-negative woman, pregnant with a D-positive fetus, develops antibodies that can potentially cross placenta and react with D-antigens of fetal red blood cells. This interaction can lead to destruction of fetal red blood cells resulting in decreased fetal hemoglobin concentration and various degrees of fetal hemolytic disease. Despite routine prophylaxis of pregnant women with Rh immunoglobulin (RhoGam), fetal hemolytic disease continues to pose a major challenge in obstetrical care of patients.

Classic management of Rh-sensitized pregnancies involves serial measurements of maternal anti-D antibody titers. No intervention is necessary when antibody titer is less or equal to 1:8, however, when the titer is greater or equal to 1:16 in albumin or 1:32 by indirect antiglobulin (indirect Coombs test), amniocentesis is the next step. Spectrophotometrical analysis (at the 450-nm wavelength) of the amniotic fluid specimen that has been shielded from light allows indirect assessment of the amniotic fluid concentration of bilirubin. Amniotic fluid bilirubin is the intermediate product of fetal red blood cells' breakdown cascade and is probably derived from fetal tracheal and pulmonary secretions. The presence of bilirubin in the amniotic fluid changes spectrophotometrically measured absorbance from linearity (change in optical density at 450 nm - OD450), and the status of fetal hemoglobin is determined by plotting obtained OD450 against existent graphs. Additional application of amniocentesis involves determination of fetal Rh-D genotype. Fetuses shown to be Rh-D negative do not require further obstetrical intervention with respect to Rhesus isoimmunization.

Patients shown by OD450 to be at risk for severe fetal anemia, and at gestational ages that forbid delivery due to prematurity, undergo cordocentesis or percutaneous umbilical cord blood sampling for direct assessment of fetal hemoglobin concentration. If significant fetal anemia is noted, intrauterine fetal blood transfusion with O-negative packed red blood cells is performed. If delivery is not suitable following single intrauterine transfusion, additional percutaneous umbilical cord blood sampling and, if necessary, additional intrauterine transfusions are carried on until delivery is feasible.

Amniocentesis, apart from its inherent complications related to pregnancy outcome, i.e. PPROM, preterm delivery and others, has major limitations with respect to significant false-positive rate of OD450 values that require major, and often unnecessary, aggressive intrauterine intervention – percutaneous umbilical cord blood sampling.

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Quoted rates of cordocentesis complications, even if performed at expert centers, are at the order of 1%. In recent years a new non-invasive ultrasound-based approach has been developed to estimate degree of fetal anemia that potentially allows bypassing determination of OD450 via amniocentesis.

It has been demonstrated that non-invasive Doppler assessment of peak systolic velocity in the fetal middle cerebral artery (MCA-PSV) can serve as a reliable tool in predicting fetal anemia. Physiological basis of this modality for assessment of fetal anemia is based on relationship between blood flow and viscosity. In fetuses with anemia, a decrease in hemoglobin and hematocrit leads to a corresponding alteration in blood viscosity. Due to strong dependence of fetal brain tissue on oxygen, cerebral arteries respond quickly to hypoxemia by changing cerebral blood flow patterns, resulting in increased MCA-PSV in anemic fetuses. Middle cerebral artery is readily visualized by Doppler studies with an angle close to 0 degrees between the ultrasound beam and direction of the blood flow, and measurements of MCA-PSV have been shown to have low intraobserver and interobserver variability. Obtained values for MCA-PSV at a given gestational age can be plotted against standard graphs and degree of fetal anemia can be inferred.

Recently published in The New England Journal of Medicine results of a multicenter, prospective study evaluated applicability of MCA-PSV for prediction of fetal anemia in Rh-sensitized pregnancies. Measurements of MCA-PSV in 111 fetuses at risk for Rh-isoimmunization, when correlated with fetal hemoglobin concentrations obtained by cordocentesis, demonstrated 100% negative predictive value and 65% positive predictive value of MSA-PSV with respect to detection of fetal anemia. These findings indicate that in the setting of a pregnancy at risk for Rh-isoimmunization, non-invasive Doppler assessment of MCA-PSV can effectively replace amniocentesis-based determination of OD450 as an indicator of fetal anemia. Moreover, 100% negative predictive value of MCA-PSV with respect to fetal anemia, allows conservative, non-invasive management of these pregnancies with intervention in the form of percutaneous fetal umbilical blood sampling reserved only for fetuses with significantly elevated values of MCA-PSV adjusted for gestational age.

The following example illustrates clinical applicability of this approach. A 28 y.o. G3P1011 at 18 weeks of gestation was referred for management of Rh-isoimmunization. Patient's blood type was Rh-negative, and her husband's blood type was Rh-positive. Anti-D titers were 1:64. Ultrasound examination demonstrated normal fetal anatomy and normal for gestational age values of MCA-PSV. Fetal status was monitored by serial measurements of MCA-PSV, which remained within non-anemic range through 35th week of gestation. At 35 weeks of gestation the patient was delivered by elective induction of labor, and neonatal hemoglobin was 54 gm/dL (normal).

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Effective assessment of fetal hemoglobin concentration by means of MCA-PSV allowed avoidance of several amniocentesis procedures for determination of OD450, and resulted in the birth of a healthy neonate.

In pregnancies complicated by Rh-isoimmunization, non-invasive measurements of middle cerebral artery peak systolic velocity provide an exciting opportunity to accurately determine the timing of cordocentesis and indicated intrauterine fetal transfusion. Such protocol avoids invasive determination of OD450, has 100% negative predictive value for fetal anemia, and has also been shown to be of some value in assessment of fetal anemia for timing of additional intrauterine transfusions if clinically necessary.

Future studies are likely to broaden the scope of clinical significance of MCA-PSV assessment. Measurements of the fetal middle cerebral artery peak systolic velocity have been successfully extrapolated to predict fetal anemia in pregnancies complicated by fetal parvovirus B19 infection. Data is currently being accumulated on applicability of this modality for assessment of fetal hemoglobin in cases of alloimmunization other than Rh-isoimmunization.

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Happenings:

Conference - Breastfeeding Update 2004

The Westchester/Putnam/ Rockland Lactation Consortium presents: The Lactating Breast- Keeping It Healthy and Pain Free

Time: Wednesday, March 17, 2004

Place: Holiday Inn Mt. Kisco, New York

For more information, contact:

Lorna Aliperti at (203) 359-1631 or via email at mailto:LCA8878@aol.com

Channel 11 – Holiday Babies

The Regional Neonatal Intensive Care Unit was the site of a live television broadcast on the WB Channel 11 New Year's Day morning. Larry Huff from Channel 11 hosted the program from 6 a.m. to 9 a.m. talking with staff and families for first babies of the New Year story. The live coverage focused on local triplets that were born on Christmas Eve and a singleton born a few days before the New Year. Staff from the NICU was interviewed along with the families and lots of cute baby pictures. By all accounts it was a fun day and provided good education for viewers throughout the tri-state area about specialized care for neonates.

Coming in the May Newsletter – Opening Dates and Events for **The Maria Fareri Children's Hospital & Trauma Center**

“Complete Quality Health Care for Women”
University Faculty Practice
Department of Obstetrics & Gynecology
Children’s & Women’s Physicians of Westchester, LLP
New York Medical College – Westchester Medical Center

***We welcome you to our new location at the Westchester Medical Arts Atrium,
19 Bradhurst Avenue, Suite 2700, Hawthorne, NY 10532***

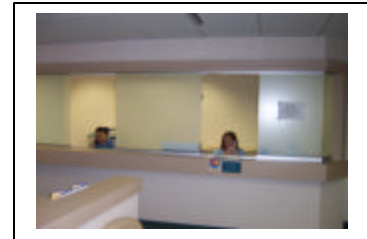
Please call us at (914) 594-4360 for an appointment today!

Services

- ❖ General OB/GYN
- ❖ Maternal-Fetal Medicine- High Risk Pregnancy
- ❖ Prenatal Diagnosis and Intervention
- ❖ Gynecologic Oncology
- ❖ Consultative Gynecology for complex problems and general care
- ❖ Reproductive Endocrinology and Infertility Evaluation
- ❖ Inpatient/Outpatient
- ❖ Ultrasound/Amniocentesis
 - Diagnostic innovative intervention procedure
 - Biophysical profile
 - Fetal Doppler studies
 - Umbilical cord sampling
- ❖ Non Stress Test (NST)
- ❖ Fetal Echo – service provided by Pediatric Cardiology
- ❖ Adolescent/Pediatric Gynecology (in coordination with the department of Pediatrics)



***Bradhurst Suite**



Faculty/Staff

General OB/GYN

Padmavati Garvey, MD



Maternal-Fetal Medicine

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Fereshteh Boozarjomehri, MD
Kafui Demasio, MD
Geetha Rajendran, MD

Affiliates

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Inutero Cardiology & Genetic Diagnosis

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Gary Satou, MD
Patty Parton, MD
David Kron, MD
Larry Shapiro, MD

Reproductive Endocrinology

Jeffrey Klein, MD
Zalman Levine, MD
Daniel Navot, MD

Congressional Visit and March of Dimes Supported Initiatives



Congresswoman Nita Lowey visited the MOD National Office in Mamaroneck, NY on January 16, 2004 to receive an award that acknowledged her Outstanding *National Leadership* in advancing Maternal & Child Health. She had originally received this distinction during their National Lobby Day in Washington, D.C. on October 16, 2003. There were more than 200 March of Dimes staff and volunteers present as well as constituents from her district. After the presentation, **Dr. Jennifer Howse**, President of the March of Dimes, **Dr. Edmund LaGamma**, (pictured with congresswoman Lowey) a Member of the Westchester/Rockland Division MOD Board and Director of the Regional Neonatal Center at Westchester Medical Center, as well as key March of Dimes administrative staff, lunched with Congresswoman Lowey. The group was pleased that Congresswoman Lowey agreed to sign-on to the Federal 'Preemie Bills' and to support MOD's other efforts to keep Franklin D. Roosevelt, the founder of the March of Dimes, on the silver dime coin. We are also pleased to announce that one of the neonatal faculty, **Dr. Heather Brumberg, MPH**, Director of Perinatal Database Management at WMC, is the recent recipient of a grant from the March of Dimes with a focus on developing a perinatal network for Westchester, Rockland and Putnam counties. The proposal will expand upon models and techniques pioneered by **Linda Bohan, RN** and colleagues at St Johns Hospital and Medical Center, Yonkers. **Audrey Waltner, MPH**, in a collaborative arrangement with the School of Public Health at New York Medical College, will assist in the WMC initiative enhancing the regional programs to enhance access to health care for women and their unborn child.

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We are interested in providing you with a newsletter that is relevant and of interest to you. Please contact us with perinatal topics you would like to see addressed. For a copy of our newsletter or to be placed on our mailing list contact us by phone or e-mail. Please see below the NYMC neonatal web site address to locate other issues of The Perinatal Gazette:

<http://www.nymc.edu/neonatology>

