●1314 TREATMENT OF EXPERIMENTAL GROUP B STREPTOCOCCAL INFECTION WITH MONOCLONAL ANTIBODY. Robert D. Christensen, Gerald Rothstein, Harry R. Hill and Seth H. Pincus, Univ. of Utah School of Med., Salt Lake City.

Monoclonal antibody(AB) may eventually have a role in the treatment of life-threatening infection. In our previous study, mortality fell from 90% to 0% when neonatal rats, inoculated with Group B Streptococci(GBS), were injected with AB. However, AB was administered simultaneously with GBS and at the same site, unlike the situation which would exist clinically. In the present study, we gave AB intraperitoneally 2 hrs after transthoracic GBS, & 76 of 76 lived. When AB was delayed for 4, 5 or 6 hrs, survival was 92% (11/12), 60% (15/25) and 29% (5/17). When delayed for 7, 8, or 9 hrs, none of 39 lived. Failure of AB to protect after 6 hrs coincided temporally with depletion of the animals' neutrophil storage pool (NSP=PMN+bands+metamylocytes in the marrow+liver+spleen, 12.0 1.2×10^6/gm control vs $1.5 \pm 2 \times 10^6$/gm infected, X ±SD, p <0.001). Other studies were performed to determine if NSP depletion, produced by a separate mechanism (subcutaneous polyvinyl disc implant) would similarly impair the ability of AB to protect from GBS. Six hrs after disc implantation, the NSP was reduced to $2.5 \pm 0.4 \times 10^6$/gm. AB given with GBS or 4 or 6 hrs after GBS, did not protect 40 animals. Increasing AB by 10 fold did not improve survival. AB has potential therapeutic use because it can prevent death even when administered hours after bacterial inoculation. The neutrophil is a critical factor in the mechanisms by which AB produces protection, but AB is less likely to benefit infected neonates with profound NSP depletion.

†1315 NECROTIZING ENTEROCOLITIS (NEC) A RADIOGRAPHIC AND PATHOLOGIC MODEL. David A. Clark, Michael Oliphant, Jeffrey E. Thompson, Lawrence Gordon, John Rokahr & Karen Lougnot. Dept. of Peds, SUNY, Ups. Med. Ctr. & Dept. of Rad. & Path., Crouse Irving Mem. Hosp., Syr., NY. Spon. M. Williams

NEC in neonates is suspected by abdominal distension, feeding intolerance and Guaiac + stools but is first clinically confirmed by abnormal findings on radiographs of the abdomen. Using our previously described rabbit intestinal loop model for NEC, we prepared 30 cm. loops in 12 weanling rabbits into which a suspension of 3% lactose, 1% purified bovine casein and a Gram negative bacteria capable of the mixed acid fermentation were injected. The blood supply was carefully preserved. Radiographs of the abdomen were taken 6 or 18 hrs. later. Following the radiographs the rabbits were opened to examine the intestines.

Radiographic findings included free abdominal air, portal air and pneumatosis intestinalis, with at least one finding in each rabbit. On gross examination distension, mucosal thinning and hemorrhage were commonly seen in the six hour experiment whereas the intestine in the rabbits sacrificed at 18 hours were more friable and necrotic. Microscopy revealed mucosal disruption with villus destruction and a fibinopurulent exudate. We conclude that the radiographic and pathologic findings in babies with NEC can be duplicated in a rabbit intestinal loop model. As bacteria ferment the carbohydrate, organic acid is produced which in the presence of a protein disrupts the intestinal mucosa. The gas generated in this reaction may dissect into the wall of the intestine (pneumatosis intestinalis), may enter the blood stream (portal air), or may escape through a perforation to become free abdominal gas.

●1316 REOPENING OF THE DUCTUS ARTERIOSUS AFTER INDOMETHACIN (INDO) CLOSURE. RI Clyman, D. Campbell and MA Heymann, Mt. Zion Medical Center and UCSF, Dept. of Pediatrics and CVRI, San Francisco, CA.

Reopening of the ductus arteriosus after INDO closure is now the major problem with INDO treatment. Among 148 infants treated with INDO, 91% responded by closing their ductus after INDO. However, 27% of the responders subsequently reopened their ductus (<1000g=33%, >1500g=12%). 70% of the infants, who were retreated with INDO after reopening of their ductus, were still responsive to INDO and closed their ductus again. In full-term lambs (150d), the ability of the ductus to relax or contract depends on the amount of Lt→Rt shunt (shunt) through its lumen. To see if ductus constriction in preterm lambs caused this same loss of ductus responsiveness, we used 42 lambs (delivered by C-section at 120-147d, and ventilated 6.6±0.5 hr) and measured ductus resistance and shunt by microspheres. 25 lambs had "moderate" ductus constriction (shunt >10% C.O. [40±5%]); 17 had "tight" constriction (shunt <10% C.O.). Following hemodynamic measurements the ductus was studied in vitro. Ductuses ≥135d, that were "tightly" constricted before sacrifice, had a significantly diminished ability to contract (to O_2+INDO) and relax (to PGE_2) compared to "moderately" constricted ductuses ≥135d. However, "tightly" constricted ductuses ≤134d: 1) had the same ability to relax to PGE_2 as "moderately" constricted ductuses, and 2) had twice the contracting ability as "tightly" constricted ductuses ≥135d. This persistence of responsiveness, following ductus constriction in immature lambs, may account for the high reopening rate after closure in preterm infants.

●1317 PULMONARY AND CARDIOVASCULAR EFFECTS OF A TOTALLY SYNTHETIC, PROTEIN-FREE SURFACTANT IN PRETERM LAMBS D. Durand, RI Clyman, MA Heymann, JA Clements, Univ. of California and Mt. Zion Medical Centers, Departments of Pediatrics and CVRI, San Francisco, CA.

Tracheal instillation of surface active material improves lung expansion and survival. However, totally synthetic surface active materials have not been as effective as preparations derived from animal sources. We tested the effectiveness of a synthetic surfactant (DPPC, hexadecanol and tyloxapol)(EXO) in preterm lambs 131-133d gestation (term = 150d) delivered by C-section, paralyzed and mechanically-ventilated for 11 hr. 15 lambs received 5 ml/kg of EXO (75 mg lipid/kg) by tracheal instillation at delivery; 5 received 5 ml/kg of a surface active material prepared from adult sheep alveolar washes (SAM)(50 mg lipid/kg); 10 received nothing (Controls). PIP and FIO_2 were adjusted to normalize $PaCO_2$ and PaO_2. The EXO group survived longer (12/15 alive at 11 hr) than the control animals (3/10 at 11 hr)($p<.05$). In addition FRC, $AaDO_2$, and PaO_2 were higher and $PaCO_2$ was lower in the EXO lambs versus the controls. There were no significant differences between the EXO and control animals in dynamic compliance, PIP, aortic or pulmonary blood pressure, cardiac output or amount of shunt through the ductus arteriosus. Although mean values for FRC, $AaDO_2$ and PaO_2 were higher in SAM-treated than in EXO-treated lambs, these differences never reached statistical significance ($p>.08$). Other measurements were similar in the EXO and SAM groups. EXO, a totally synthetic surfactant, produces significant improvement in survival and respiratory status in preterm lambs.

1318 CAN INDOMETHACIN BE USED IN INFANTS WITH AN INTRACRANIAL HEMORRHAGE? P. Maher, B. Lane, R. Ballard, R. Piecuch and RI Clyman, Mt. Zion Medical Center, Department of Pediatrics, San Francisco, CA.

Because indomethacin interferes with normal platelet aggregation, its use has been contraindicated in infants with an intracranial hemorrhage (ICH). From 1/81 to 8/83 we examined 1) all infants less than 1250g and 2) infants between 1250-1500g who had respiratory distress for the presence of an ICH by ultrasonography within the first 4 days after birth. There were 33 infants who had an ICH diagnosed within the first 4 days (mean age 2.6 ± 1.0 days, ± SD). They were reexamined by ultrasound at 3-7 day intervals for extension of their ICH. An ICH was considered to have extended if the ICH had either: 1) increased in size within the germinal matrix, 2) appeared in a new parenchymal site, or 3) extended into the ventricle. 16 infants had a PDA and were treated with indomethacin (0.4 mg/kg over 36 hr) after the initial ICH was diagnosed. The age for starting indomethacin was 4.1 ± 0.9 days. 17 infants did not have a PDA and did not receive indomethacin. Both the indomethacin-treated and non-treated groups were similar in birthweight, gestational age, gender, Apgar scores, incidence of IRDS, timing of the initial ultrasound scan, number of followup scans (5.4 ± 2.6), as well as the location (germinal matrix alone = 13, GM or parenchymal plus IVH = 20) and the degree of hemorrhage in the initial scans. Only one of 16 (6.3%) who received indomethacin versus 2 of 17 (11%) who did not receive it, had extension of their initial ICH. Although indomethacin may alter platelet function it does not appear to cause extension of a preexisting ICH.

1319 LIPID CLEARANCE AND POSTNATAL AGE IN THE PREMATURE INFANT RECEIVING PARENTERAL NUTRITION (PN). Richard J. Cooke and Marlene Buis. Univ. of Tenn. CHS, Depts. of Pediatrics and OB-GYN, Memphis, TN. (Spon. by Henrietta S. Bada)

To determine if lipid clearance improved with postnatal age, we measured plasma triglycerides (TG) in 25 stable preterm infants (1410 ± 290 gm; 31.2 ± 1.6 gm; mean, SD) receiving PN, at 4 ± 1 (#1), 6 ± 1 (#2), and 8 ± 1 (#3) days of age. Although caloric intake per kg did change (38 ± 10 on #1, 48 ± 9 on #2, 51 ± 8 on #3) mean daily caloric intake was 46.9 throughout the study period. 0.34 (N = 9) or 0.68 gm (N = 16) per kg of lipid was infused daily for 5 days over a 4- or 8-hour period, respectively (.08 gm/kg/hr). The infusion rate was monitored every 30 minutes by the investigators. Plasma TG (mg/dl) were analyzed using ACA TG Kit (DuPont). The results (mean, standard deviation) are outlined.

	#1	#2	#3
Pre-infusion	52 ± 34	39 ± 21	46 ± 27
Post-infusion	108 ± 59	132 ± 66	134 ± 79
Change	56 ± 43	92 ± 56	88 ± 65

Post-infusion values are somewhat higher ($P = .06$) on days 2 and 3 compared to 1. The rise in plasma TG is greater ($P < .05$) on day 2 and 3 when compared to day 1. 3 of 24 infants developed hypertriglyceridemia (TG >200 mg%) on day 1 versus 8 of 24 on days 2 and 3 ($P = .006$). We conclude that 1) lipid tolerance does not improve and may deteriorate in the first 10 days of life; 2) hypertriglyceridemia occurs even at a relatively low dosage and infusion rate.