1057 UNDERESTIMATION OF S. AUREUS TOLERANCE. Harold S. Raucher and Horace L. Hodes. Mount Sinai School of Medicine, Mount Sinai Hospital, Department of Pediatrics, New York.

Recent work indicates that antibiotic tolerance among S. aureus strains may be of clinical importance. The percentage of strains found to be tolerant varies greatly in published reports. In addition, the percentage of the bacteria within the tolerant strains has also differed greatly (from 0.1% to nearly 50%). The different techniques used by individual investigators may account for these discrepancies. We report here that a major cause of underestimating tolerance is the carryover of antibiotic from the tubes used to determine the minimal inhibitory concentration (MIC) to the blood agar subculture plates that are used to identify and count the surviving organisms.

We consider a strain to be tolerant if more than 0.1% of its bacterial population survives 18 hours in 32 times the concentration of the MIC and is able to grow when subcultured onto a blood agar plate. It has been assumed that spreading the incubated antibiotic-containing broth culture onto agar plates removed the inhibitory effect of the drug. However, when we tested 15 S. aureus strains by the standard method only 5 qualified as tolerant. In contrast, when the inhibitory effect of the antibiotic was removed by twentyfold dilution before plating, 5 additional strains were found to be tolerant. Also, in all 15 strains tested a greater number of bacteria survived at 32 times the MIC than occurred with the standard method.

1058 RAT MODEL OF PRENATAL CHLAMYDIA TRACHOMATIS (Ct) INFECTION, Philip J Rettig, Geoffrey Altshuler (Spon. by Melvin I Marks), Univ. of Oklahoma Health Sciences Center, Departments of Pediatrics and Pathology, Oklahoma City.

Although Ct has been associated with genital infections, prematurity, and stillbirths, studies of in utero (IU) Ct infection are lacking. To assess ascending IU infection and neonatal pneumonia we developed a rat model with preliminary maternal tail vein Ct injection (n=135 fetuses) and with Ct inoculation into decidua (D) (n=40) or into amniotic sac (A) (n=39) at laparotomy at 17-19 days' gestation. Controls were inoculated with uninfected tissue culture material. Animals were sacrificed on day 21 (term) by caesarean section. Injection of 2.58 to 810×10^2 IFU of Ct (DE strain) into tail veins did not produce materno-fetal infection or inflammation. Inoculation of 1.29 to 92.3×10^2 IFU at laparotomy produced placental infection in 18/22 A and 18/23 D infections, with yields of from 10 to 1.96×10^6 IFU/ml homogenized tissue. Maximal fetal sac inflammation was found with high-titer A infection. D inoculation produced deciduitis and inflammatory extension over the placental surface, demonstrated both by standard and indirect immunofluorescent light microscopy. Inflammatory evidence of infection or positive cultures were not observed in controls. Infection at days 17 and 18 produced stillbirths (3/6 A; 3/7 D). Ct inoculations were associated with severe placental inflammation, but there was no associated fetal pneumonia. Aspirated inflammatory cells however were present in fetal lung tissue which was Ct culture-positive. This represents a model of ascending IU infection with Ct and with adaptation will permit study of neonatal pneumonia due to this organism.

1059 TRANSIENT PUSTULES AND THE EXANTHEM OF KAWASAKI DISEASE. Arthur R. Rhodes, George F. Murphy, Jeffrey D. Bernhard, and Martin C. Mihm (spon. by M.E. Avery) Harvard Medical School, Department of Dermatology, Boston.

The cutaneous features of 10 children fulfilling all 6 criteria of Kawasaki Disease (KD) (J Inf Dis 137:91, 1978) were studied prospectively during a 1979-1980 epidemic in Massachusetts. Discrete and confluent pink papules, plaques, and erythema that changed in pattern from hour to hour, interspersed by areas of uninvolved skin and distributed over the head, torso and extremities, began 1-5 days (d) after the first sign or symptom of illness, median (m)=1.5d, and persisted 7-16d (m=10d). Annular plaques, scarlatiniform truncal and genital erythema, and patchy fine scaling were frequent. Iris lesions were not observed. The exanthem antedated palm/sole inflammation by 0-6d, m=2d. Multiple minute pustules mainly on the proximal extremities within red areas were noted in 8 cases 2-8d (m=6.5d) after the onset of the rash, lasting 2-4d, m=2d. Smears of the pustules showed sterile collections of neutrophils. Paraffin (7) and epon-embedded (3) sections manifested variable epidermal alterations and marked perivascular inflammation of the superficial venular plexus, but frank necrotizing venulitis was not observed. Direct immunofluorescence studies were non-revealing. The exanthem of KD, occasionally mistaken for other diseases in the early phase, has some unique features, but "time" is often required for their evolution and recognition. Evanescent tiny pustules, not described previously, appear to occur frequently. Histologic changes, though not specific, may aid diagnosis.

1060 TREATMENT OF BONE AND JOINT INFECTION WITH CEFORANIDE-A NEW CEPHALOSPORIN ANTIBIOTIC. G.C.Rodgers, Jr. L.B.Weiner, J.A.McMillan and D.R.VanHarken (spon. by W.H.Bergstrom) Dept. of Peds. and Pharmacology, SUNY, Upstate Medical Center and Bristol Laboratories, Syracuse, New York.

Eleven patients ranging in age from 2 to 16 years with documented bone and joint infections were treated with Ceforanide (C), an experimental cephalosporin antibiotic. Eight had osteomyelitis and 3 had joint infections. S. aureus was isolated from the blood or infection site in 7 of the patients, 5 with osteomyelitis and 2 with joint infections. One patient was treated for 3 weeks without a positive culture for a presumed septic joint. The patient improved during treatment but subsequently relapsed and was found to have H. influenzae osteomyelitis. No organism was isolated from 3 patients. One patient failed to improve within the first week. A blood culture during that time grew S. aureus and therapy was changed. Patients received C, 10-20 mg/kg/dose IV or IM every 12 hours. Six patients had received prior antibiotic therapy for periods ranging from 2 to 14 days. One patient receiving C experienced an urticarial rash following 6 days of treatment and was changed to another antibiotic. All S. aureus isolates were tested against C and found to be susceptible. Serum C levels and pharmacokinetics were measured and confirmed the adequacy of the 12 hour dosing schedule. Treatment with C was successful in 8/11 patients with follow-up of 6-18 months. C is an effective antibiotic for the treatment of bone and joint infections caused by susceptible organisms. The 12 hour dosing interval offers a unique advantage in pediatric patients.

● **1061** PULMONARY VASCULAR AND GRANULOCYTE RESPONSE TO GROUP B STREPTOCOCCAL (GBS) TOXIN. Jorge Rojas, Lars E. Larsson, Kenneth L. Brigham and Mildred T. Stahlman. Vanderbilt University, Dept. of Pediatrics, Nashville, TN.

We have previously shown that a toxin isolated from GBS causes pulmonary hypertension, hypoxemia and fever in adult unanesthetized sheep. (Fed.Proc.37:854,1978) We have subsequently studied its effects on pulmonary vascular permeability and circulating granulocytes.

Seven young adult sheep were instrumented to measure pulmonary artery and left atrial pressures, lung lymph flow and white blood cell and differential counts. Two mg of toxin caused an early phase of pulmonary hypertension and a late phase of increased lung vascular permeability. The granulocyte count fell to less than 10% of baseline values by 60 min and returned to near baseline by 5 hrs. The immature to total granulocyte ratio increased six fold by 5 hours. Granulocyte trapping and fragmentation in the pulmonary capillaries was demonstrated by electron microscopy in four sheep sacrificed during the second phase.

To explore the role of prostaglandins we compared the response to GBS toxin alone with the response to the same dose of toxin during the infusion of indomethacin (IN) or methylprednisolone (MP). IN prevented the initial pulmonary hypertensive phase but did not modify the granulocytopenic response. In contrast, MP blocked the granulocytopenia but had little effect on the pulmonary hemodynamic changes.

We concluded that the two components of the response seem to be independent. Biosynthesis of prostaglandin endoperoxides appears necessary for the acute pulmonary hypertensive response but not for the granulocytopenia. Sequestration of granulocytes may play an important role in the pathogenesis of the pulmonary vascular changes.

● **1062** PATHOPHYSIOLOGY OF ROTAVIRUS DIARRHEA: THE IMPORTANCE OF CARBOHYDRATE MALABSORPTION IN PURGING AND ACIDOSIS. David A. Sack, Marc Rhoads, Ayesha Molla, A. Majid Molla, A. Abdul Wahed. (Spon. by John Neff) International Center for Diarrheal Disease Research, Bangladesh; Dacca, Bangladesh and Johns Hopkins University School of Medicine, Dept. of Medicine; Baltimore, Maryland.

We studied a group of Bangladeshi children, aged 6 to 30 months with rotavirus diarrhea and clinically significant dehydration to determine the association of carbohydrate malabsorption with severity of purging and acidosis. These studies were prompted by earlier clinical studies which suggested that stools from patients with rotavirus diarrhea had many characteristics of malabsorption. Of 25 children admitted into the study, 19 had rotavirus antigen in their stool by ELISA and 11 of these had no other pathogen detected. Serum, urine and stool specimens were collected; the stools collected included catheterized and complete collection of all stools passed in order to determine electrolyte, acid, and carbohydrate lost in the stool. The stool sodium was not related to purging rate (in contrast to toxigenic diarrhea); however, the purging rate and metabolic acidosis were related to carbohydrate content of the stool. Thin layer chromatography of the stool revealed many common sugars and an acid titration curve of the stool suggested the presence of buffering by organic acids. Our studies suggest that, in contrast to enterotoxigenic diarrhea, carbohydrate malabsorption plays a primary role in the metabolic acidosis and an important secondary role in the purging of rotavirus diarrhea.