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MICROBIOLOGIC AND CLINICAL CHARACTERIZATION OF COAGULASE-NEGATIVE STAPHYLOCOCCI FROM CEREBROSPINAL FLUID SHUNTS. Janara J. Younger, Gordon D. Christensen, James C.H. Simmons, and Fred F. Barrett. Departments of Pediatrics and Medicine, and Neurosurgery, University of Tennessee Center for the Health Sciences, VA Medical Center, Memphis, and LeBonheur Children's Medical Center.

Recent studies have suggested that bacterial adherence to smooth surfaces may be important in the pathogenesis of medical device infections with coagulase-negative staphylococci (CNS). We collected and characterized 84 strains of CNS (51 pathogens and 33 contaminants) cultured from cerebrospinal fluid (CSF) shunts of pediatric patients. Species distribution was similar for both pathogens and contaminants except that 20% of the pathogens and none of the contaminants were phosphatase-negative *Staphylococcus epidermidis* ($p < .01$). Neither species nor antibiotic susceptibility correlated with clinical outcome. All patients treated with total shunt removal were cured while only 33% of the patients treated with antibiotics alone were cured. As an index of bacterial adherence, we measured the optical density (OD) of stained bacterial films adherent to tissue culture plates. Pathogenic CNS were more adherent than CSF contaminants (mean OD .510 vs .307 $p < .05$). Furthermore, 5/6 (83%) of infections due to non-adherent organisms were cured with antibiotics alone compared to 17/43 (40%) of infections due to adherent organisms ($p < .05$). These results suggest that adherence to CSF shunts is important in the pathogenesis of CSF shunt infections.

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SERUM ANTIBODY (Ab) KINETICS FOLLOWING H. INFLUENZAE TYPE B POLYRIBOSEPHOSPHATE (PRP)-DIPHTHERIA TOXOID CONJUGATE (PRP-D) VACCINE GIVEN TO INFANTS: 1 YR FOLLOW-UP AND BOOSTER DOSE RESPONSE. John M. Zahradnik and Lance K. Gordon (spons. by W.P. Glezen), Baylor College of Medicine, Dept. Micro. and Pediatrics, Houston, Connaught Labs, Inc., Swiftwater, PA.

We have previously reported a 90% (28/31) anti-PRP Ab response following administration of 3 doses of PRP-D to 3 mo. old infants. The resulting group geometric mean (GM) Ab conc was 0.99 $\mu\text{g/ml}$ (1.4 $\mu\text{g/ml}$ in responders). Sera has been obtained from 25 subjects at 6 mos., and 8 subjects at 12 mos. postvaccine. As expected, anti-PRP conc had dropped in 24/25 at the 6 mo. followup, but was still $>0.15 \mu\text{g/ml}$ in 60% (12/20) of those who had previously achieved a titer of $>0.15 \mu\text{g}$ one month after dose 3. The 6 mos. GM Ab conc for these 25 subjects decreased from 0.883 $\mu\text{g/ml}$ to 0.163 $\mu\text{g/ml}$ ($p < 0.01$). At 12 mos. post-vaccination, 5/7 children had a further drop (one 6 mos. sera not obtained), but 62% (5/8) had an anti-PRP conc. $>0.15 \mu\text{g/ml}$ (group GMT - 0.163 $\mu\text{g/ml}$). All 8 subjects received a 4th dose of PRP-D at 18 mos. of age (12 month follow-up) without adverse reactions. Excellent anti-PRP responses have developed in the 3 subjects studied to date, a 23 to 137-fold increase over their previous peak Ab conc (2.7 $\mu\text{g/ml}$, 5.6 $\mu\text{g/ml}$ and 31.3 $\mu\text{g/ml}$).

In summary, anti-PRP Ab conc $>0.15 \mu\text{g/ml}$ was present in 60% of subjects vaccinated at age 3 mos. when evaluated at 6 and 12 mos. postvaccine. A 4th booster dose at 18 mos. did not result in any adverse reaction and induced excellent anti-PRP responses. The remaining subjects are being revaccinated and Ab evaluated.

METABOLISM

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PLASMA FATTY ACIDS (FA) IN VERY-LOW-BIRTH-WEIGHT (VLBW) NEONATES RECEIVING 10% SAFFLOWER OIL. D.H. Adamkin. University of Louisville, Division of Neonatal Medicine. Spon by B.F. Andrews.

Five VLBW neonates with mean birthweight 908g (range .8-1.0kg) all had the pathologic triene (5,8,11 eicosatrienoic acid) present in sera by a mean age of 10 days (range 7-13) while receiving fat-free parenteral nutrition. Three had elevated triene/tetraene ratios (T/T) ($> .2$) indicative of essential fatty acid deficiency. Plasma FA were studied before and after 2 weeks of TPN including 10% safflower oil which provided mean fat dosage (2.4g/Kg/d) range (1.9-2.8). Linoleic acid contributed between 8-30% of calories and linolenic $< .05\%$ of the total calories. After two weeks the T/T ratio normalized.

	Palmitic (C16:0)	Stearic (C18:0)	Oleic (C18:1)
pre	25.8 $\pm$ 1.8	3.8 $\pm$ 1.4	29.2 $\pm$ 4.8
14 day	24.5 $\pm$ 2.0	9.0 $\pm$ 1.7*	20.7 $\pm$ 2.8*
	Linoleic (C18:2)	Linolenic (C18:3)	Arachidonic (C20:4)
pre	8 $\pm$ 1.4	.03 $\pm$.02	9.3 $\pm$ 3.2
14 day	34.6 $\pm$ 2.8*	.75 $\pm$ 1.5*	5.7 $\pm$ 1.6*

*Change significant $p < .01$ (FA expressed as percentage of total).

Despite administration of parenteral fat emulsion rich in linoleic acid (the essential fatty acid) and a significant increase in plasma linoleic, its higher polyunsaturated FA homologue, arachidonate actually decreases. In a previous study we demonstrated that when $> .1\%$ of calories are supplied from linolenate there is inhibition of conversion of linoleic to arachidonic. However, from this data we conclude that as seen with soybean emulsion, linoleic and arachidonic may be competitive.

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PLASMA AMINO ACIDS IN PREMATURE (PT) NEONATES RECEIVING A PEDIATRIC AMINO ACID FORMULATION (PA) CONTAINING TAURINE, GLUTAMATE AND ASPARTATE. D.H. Adamkin, P. Radmacher. University of Louisville, Division of Neonatal Medicine, Spon. B.F. Andrews.

Twenty PT neonates received either PA or a standard amino acid solution (A) for one week. Mean plasma amino acid concentrations ($\mu\text{Mol/L} \pm \text{SD}$) were assayed pre-and post 7 days of infusion.

	B.W.(g)	Fluids (ml/Kg/d)	Calories (Kcal/Kg/d)	Prot (g/Kg/d)
A	1558 $\pm$ 168	124 $\pm$ 21	50.8 $\pm$ 14	1.6 $\pm$.3
PA	1449 $\pm$ 160	127 $\pm$ 18	53.4 $\pm$ 14	1.5 $\pm$.3

*Post concentration significantly different $p < .01$ for A vs. PA.

	Aspartic	Glutamine	Glycine*
	pre	pre	pre
A	30.6 $\pm$ 11	47 $\pm$ 19.5	204 $\pm$ 170
PA	34 $\pm$ 13	35 $\pm$ 13	204 $\pm$ 116
	post	post	post
A	22 $\pm$ 8	50 $\pm$ 24	68 $\pm$ 43
PA	26 $\pm$ 11	21 $\pm$ 6	83 $\pm$ 42

Despite differences in solution concentration, plasma aspartic and glutamic acids were similar. The other significant differences suggest that PA meets some of the unique metabolic needs of the PT infant including limited oxidative metabolism of methionine avoiding metabolic acidosis and potential neurotoxicity of excessive glycine administration and the dietary essentiality of taurine.

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NEUTRAL LIPASE (NL) ACTIVITY IN BOVINE AND HUMAN ADIPOSE TISSUE (AT). Festus O. Adebajo, Department of Pediatrics, Meharry Medical College, Nashville, Tennessee 37208.

Using ^{14}C triolein as substrate, the activity of NL in bovine and human AT was determined in a) the crude extract in PBS pH 7.4, b) the 105,000 xg supernatant (S105 fx), c) the pH 5.2 acetic acid precipitate redissolved in tris-HCl pH 7.4 (pH 5.2 ppt), d) the pH 5.2 ppt solubilized in 3mM Nonidet P40 (sol. pH 5.2 ppt) and e) the aqueous fraction of the pH 5.2 ppt (Aq. Fx.). The results shown indicate that most of the original activity was

FRACTION	BEEF n=2	HUMAN n=5
Crude Extract	2.62 $\pm$ 0.16	2.01 $\pm$ 0.46
S105 Fx	2.80 $\pm$ 0.42	3.22 $\pm$ 0.69
pH 5.2 ppt	5.82 $\pm$ 0.62	8.08 $\pm$ 2.11
Sol. pH 5.2 ppt	1.71 $\pm$ 0.11	1.44 $\pm$ 0.20
Aq. Fx	0.98 $\pm$ 0.10	0.91 $\pm$ 0.21

recoverable in the S105 Fx. It also shows that in contrast to published rat results, NL is several times more active in rat than in either bovine or human AT. Further while, in rat, there was a 35-fold purification achieved at the pH 5.2 ppt stage, there was only a 2-fold purification in the bovine and a 4-fold purification in the human AT at that stage. Solubilization with Nonidet P-40 appears to render both enzymes less measurable by the assay method employed. These data suggest that NL in human and bovine AT are more alike and differ in some important respects from NL in rat AT.

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COMPLICATIONS OF DIETARY TREATMENT OF TYROSINEMIA. Vanessa Z. Ameen and Geraldine K. Powell, Univ. of Texas Med. Br., Dept. of Pediatrics, Galveston.

Tyrosinemia was diagnosed in an 8 month old white male infant with liver disease based on: plasma tyrosine (TYR) > 6 times normal, high α -fetoprotein (αFP) and liver biopsy findings of post necrotic cirrhosis with fatty change and moderate parenchymal siderosis. Within 3 days of institution of the recommended 3200 AB formula, TYR decreased to normal but plasma methionine (MET) increased 16 times normal. Concomitant with elevation in MET was worsening of liver disease with severe cholestasis as evidenced by marked elevations of serum bile acids (SBA) and gamma glutamyl transpeptidase (GGT) with a mild increase in transaminase (ALT). This resolved when dietary MET content was decreased and MET became normal. αFP however, considered a marker of hepatic regeneration following hepatocellular necrosis, did not increase further during this episode.

Time (wks)	0	1 $\frac{1}{2}$	2 $\frac{1}{2}$	5	8	14	20
MET (N 1.3-4.2)	8.4	63.4	3.6	3.8	3.8	3.8	2.8
TYR (N 4.4-10.6)	60.5	2.7	1.6	9.4	6.3	8.8	6.1
SBA (N $< 50 \mu\text{g/dl}$)	195	637	2230	1948	310	90	68
GGT (N < 50)	195	274	321	217	137	122	112
ALT (N < 51)	40	58	78	27	16	21	24
αFP (N < 20)	48,000	41,500	17,414	11,735	---	7520	5813

This suggests 1) High MET may be as important as high TYR in the liver disease associated with Tyrosinemia; 2) Effect of high MET appeared to be cholestatic rather than hepatocellular injury. This suggests caution in using the low TYR, high MET formula designed for dietary management of this disease.