Clippings

❑ Multiple Serotonergic Brainstem Abnormalities in Sudden Infant Death Syndrome

A study reported in the Journal of the American Medical Association reveals an abnormality in the brain stem that impairs a baby's ability to regulate breathing.

Scientists hope the information will lead to early detection and treatment for infants at risk, bolster recommendations to put babies to sleep on their backs and offer some answers to parents struggling to understand their unfathomable loss. The eight-year study at Boston Children's Hospital compared autopsy data from 31 infants who died of SIDS and 10 who died suddenly from other causes. Researchers focused on the brain stem. Compared with controls, SIDS cases had a significantly higher 5-HT neuron count and 5-HT neuron density ($P<0.001$), as well as a significantly lower density of 5-HT_{1A} receptor for all 9 nuclei) in regions of the medulla involved in homeostatic function. The ratio of 5-HTT binding density to 5-HT neuron count in the medulla was significantly lower in SIDS cases compared with controls. Male SIDS cases had significantly lower

5-HT_{1A} binding density in the raphé obscurus compared with female cases or with male and female controls combined. No association was found between 5-HT neuron count or density, 5-HT_{1A} receptor binding density, or 5-HTT receptor binding density and other risk factors.

When babies sleep face-down or have their faces covered, they are thought to breathe carbon dioxide they have just breathed out. They take in less oxygen. Lead study author said a normal baby would wake up, turn over and start breathing faster when carbon dioxide levels rose but, in babies who died from SIDS, defects in the serotonin system might impair those reflexes. JAMA 2006; 296: 2124-2132.

Comments: Medullary 5-HT pathology in SIDS is more extensive than previously delineated, potentially including abnormal 5-HT neuron firing, synthesis, release, and clearance. This study also provides preliminary neurochemical evidence that may help explain the increased vulnerability of boys to SIDS.

❑ Bone Density Evaluation in Teens Prevents Future Osteoporosis

Peak bone mass, which reaches its maximum between ages 20 to 29 years, is a predictor of osteoporosis. Up to 60% of adult total bone mineral is acquired during adolescence. This study describes the most effective methods to evaluate bone density in teens to prevent future osteoporosis.

This review covers known conditions associated with impaired bone mineral accrual; clinical settings in which the evaluation of "at-risk" adolescents should be considered; available methods for evaluating bone density and their respective limitations; and potential therapeutic options for patients diagnosed with low bone mineral density (BMD). The authors also reviewed current recommendations regarding physical activity and nutrition. The role of regular exercise and calcium intake is stressed. Although serum and urinary markers of bone turnover are sensitive to changes in bone formation and resorption, variability in these measures

during adolescence mandates that their use be restricted to monitoring treatment effects rather than diagnosis. Common measures of calcium homeostasis do not directly reflect bone turnover, but they may be useful when evaluating low BMD, in conjunction with body mass index calculation and Tanner staging. Use of medications like bisphosphonates is cautioned and various modalities for early intervention discussed. Arch Pediatr Adolesc Med. 2006; 160:1026-1032.

Comments: Adolescence is the most critical period across the life span for bone health because more than half of PBM (Peak Bone Mass) is accumulated during the teenage years; unfortunately, research has not yet generated evidence to identify appropriate candidates for both baseline bone density screening and continued monitoring.

❑ Effect of breast feeding on intelligence in children: prospective study, sibling pairs analysis, and meta-analysis

This study was done by MRC Social and Public Health Sciences Unit, Glasgow and Department of Psychology, University of Edinburgh, Edinburgh, with the objective to assess the importance of maternal intelligence, and the effect of controlling for it and other important confounders, in the link between breast feeding and children's intelligence. Subjects Data on 5475 children, the offspring of 3161 mothers in the longitudinal survey was done. Study of the effect of breast feeding on cognitive ability and the impact of a range of potential confounders, in particular maternal IQ was done. Main outcome measure IQ in children was measured by Peabody Individual Achievement Test. Additional analyses compared pairs of siblings from the sample who were and were not breast fed. The results were considered in the context of other studies that have also controlled for parental intelligence via meta-analysis. It was found that mother's IQ was more highly predictive of breastfeeding status than were her race, education, age, poverty status, smoking, the home environment, or the child's birth weight or birth order. One standard deviation advantage in maternal IQ more than doubled the odds of breast feeding. Before adjustment, breast feeding was associated with an increase of around 4 points in mental ability. Adjustment for maternal intelligence accounted for most of this effect. When fully adjusted for a range of relevant confounders, the effect was small (0.52) and non-significant (95% confidence interval -0.19 to 1.23). The results of the sibling comparisons and meta-analysis corroborated these findings. BMJ 2006;333: 945.

Comments: Breastfeeding has little or no effect on intelligence in children. While breast feeding has many advantages for the child and mother, enhancement of the child's intelligence is unlikely to be among them.

❑ Will Reduction of Antibiotic Use Reduce Antibiotic Resistance? The Pneumococcus Paradigm

Community-acquired respiratory infections in general, and those caused by *S. pneumoniae* in particular, are the main reason for prescribing antibiotics in young children. Antibiotic drug abuse is common. This is the basis for the initiative for the reduction in antibiotic use. However, failure to consider that not all antibiotics are similar in their effect on promotion of resistance has led to continuous emerging resistance. In this study, the trends in prescribing antibiotics in young children and their interrelation with antibiotic resistance among clinical respiratory isolates of *S. pneumoniae* in children is reviewed,

along with theoretical considerations and research evidence. This led to the conclusion that among antibiotics, the least resistance-promoting drug for *S. pneumoniae* is amoxicillin (+/– clavulanate), whereas oral cephalosporins and azithromycin demonstrate a higher resistance-promotion potential in the individual population in the community. Ped Inf Dis Journal 2006, 25: 981-986.

Comments: Although antibiotics differ in their resistant-promotion potential, all still do promote resistance. Rational use of any antibiotic is highly advisable, especially in Indian context.

❑ Prebiotics Reduce the Risk of Atopic Dermatitis

Atopic Dermatitis is relatively a common diagnosis in children. This study tried to examine effects of probiotics on Atopic Dermatitis.

Researchers examined the effect of a specific prebiotic mixture of galacto- and long chain fructo-oligosaccharides on the incidence of atopic dermatitis in 259 such infants. The prebiotics mixture was well accepted and tolerated by all infants. The infants, who had been started on bottle feeding, were randomly assigned to receive either 0.8g/100 mL prebiotics or maltodextrin as placebo in formula. Overall, 102 infants in the prebiotic group and 104 in the placebo group completed the study.

A total of 10 infants (9.8%) in the prebiotics group and 24 (23.1%) in the placebo group developed atopic dermatitis. Fecal flora was analyzed in a subgroup of 98 infants. Compared to the placebo group, the intervention group had a significant increase in the number of fecal bifidobacteria. No significant difference in lactobacilli counts was observed.

In contrast to reduction of a predictive biomarker of allergy (such as IgE antibodies), the specific antibody response to vaccination was not influenced, demonstrating an overall positive modulation of the immune response. It was concluded that a mixture of prebiotic oligosaccharides given to infants at risk for atopy reduces the occurrence of atopic dermatitis during the first 6 months of life. Arch Dis Child 2006; 91: 814-819.

Comments: The specific prebiotic mix modulates the postnatal development of the immune system via the gut flora and the modulation of the immune system could have consequences on reduction of allergies and infections later in life.

❑ Rate of BMI Increase in Childhood May Predict Risk of Adult Heart Disease

The rate at which Body Mass Index (BMI) increases in childhood is associated with the risk of coronary heart disease (CHD) as an adult, according to this study.

According to the study, rapid weight gain after the age of two years increases the risk of CHD in adulthood. They suggested that babies born thin or short lacked muscle, and rapid weight gain later in childhood may lead to a disproportionately high fat mass that may persist in adulthood, leading to a higher risk for CHD.

This was a descriptive cohort study of children born in Helsinki during a 10-year period from 1934 to 1944 and examined the association between childhood growth patterns and adult risk of CHD or death from CHD. A subgroup of those studied also received glucose, insulin, and proinsulin assays, as a measure of insulin resistance. N Engl J Med 2005; 353: 1802-1809, 1848-1850)

Comments: Indians are undergoing the nutritional and epidemiologic transition to western styles of diet, sedentary behavior, obesity, and chronic diseases, and the ominous pattern – lower birth weight followed by excess weight gain in childhood – is both common and liable to persist. It is therefore imperative that, along with vigorous efforts to optimize childhood growth, researchers and policymakers identify, quantify, and evaluate strategies to modify prenatal and perinatal determinants of adverse adult health outcomes.

❑ Early Eye Exams Needed for Children Born Prematurely

Ophthalmologic studies of preterm children, defined as birth weight of 1,500 g or less, have found that these patients are at an increased risk of developing vision problems and need follow-up examinations. Premature birth may predispose children to astigmatism due to disturbances in ocular growth such as changes in axial length, an increase in corneal curvature, a shallower anterior chamber, and a thicker lens.

To clarify the best age for these exams, the researchers performed retinoscopies for refractive errors at ages six months, 2.5 years, and 10 years for 198 children born at 24 to 35 weeks gestational age.

The presence of astigmatism and anisometropia of two diopters or more at the 2.5-year exam significantly predicted the two conditions at age 10 in a multivariate analysis (both P <0.001) whereas their presence at the six-month exam did not. Between the 2.5- and 10-year exams, 27 children lost their astigmatism and 14 developed a new case. The investigators found that the overall prevalence of one diopter or more astigmatism dropped significantly between six months and 2.5 years of age (54.5% versus 27.3%, P <0.001) and then became stable out to 10 years (27.3% versus 20.7%, P = 0.6). Arch Ophthalmol. 2006; 124: 1608-1614.

Comments: At two and one-half years of age, it is still possible to prevent amblyopia and prescribe eyeglasses to improve the development of vision. Therefore all preterm children should have follow-up examinations with their ophthalmologist at about this age.

❑ Googling for a diagnosis–use of Google as a Diagnostic Aid: Internet based Study

Doctors should consider using Google to search for information that might help them make accurate diagnoses, say researchers from Princess Alexandra Hospital, Brisbane, Australia**.**

This study was designed to determine how often searching with Google (the most popular search engine on the World Wide Web) leads doctors to the correct diagnosis. Google search was used to search for diagnoses.

They found 26 hard-to-diagnose cases which had been published in the NEJM (New England Journal of Medicine), such as Cushing's syndrome and CJD (Creutzfeldt-Jakob disease) during 2005.

Using 3-5 search terms, the doctors carried out a Google search for each case, without knowing beforehand what the correct diagnosis was. They chose the three most prominently ranked diagnoses that matched the signs and symptoms, and compared the results with those in the NEJM.

Percentage of correct diagnoses from Google searches (compared with the diagnoses as published in the NEJM*)* was obtained. Researchers say that 58% of diagnoses carried out using Google searches

were correct. BMJ 2006; doi:10.1136/ bmj.39003.640567.

Comments: As internet access becomes more readily available, the web is rapidly becoming an important clinical tool for doctors. The use of web based searching may help doctors to diagnose difficult cases. It is essential that diagnoses are made from high quality sources, and while we know that Google is quick and easy to use, and does contain good sources of information, it does also contain material that could mislead. While clinicians are expert in their clinical area, if they are relying on Google to make diagnoses, they need to be confident that they can filter the good results from the bad.

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