complete blood count, erythrocyte sedimentation rate, and reverse-transcriptase polymerase chain reaction (RT-PCR) to detect NGF receptor mRNA expression on purified eosinophils that were obtained from peripheral blood.

RESULTS: We found only 3 patients who had asthma and had positive NGF receptors on isolated eosinophils from the peripheral blood by RT-PCR; however, all studied patients with bronchopneumonia had negative results. Moreover, there was a statistically significant difference between patients with positive and negative results for NGF receptors on isolated eosinophils by RT-PCR regarding age, the frequency of recurrence of asthma attacks, and positive history of other atopic diseases such as allergic dermatitis and allergic rhinitis; however, there was no statistically significant difference between patients with positive and negative results regarding gender, type of feeding, or family history.

CONCLUSIONS: There is a strong association between NGF receptors on isolated eosinophils and the severity of allergic lung diseases and bronchial asthma.

PREVALENCE OF TUBERCULOSIS AMONG CHILDREN WHO HAD TYPE 1 DIABETES AND WERE ADMITTED TO ELMINIA UNIVERSITY HOSPITAL

Submitted by Basma Abdelmoez

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INTRODUCTION: Tuberculosis has been a cause of significant morbidity and mortality for humans throughout history. There are 20 million cases of tuberculosis worldwide with 8 million new cases each year. Three million deaths annually are directly attributable to tuberculosis. Previous clinic-based studies in developed countries demonstrated an association between tuberculosis and diabetes but did not determine whether this is attributable an increase in recently transmitted or reactivated infection of tuberculosis.

OBJECTIVE: The objective of this study was to identify the epidemiologic relationship between tuberculosis and diabetes in children by using MycoDot, a simple, rapid, and reliable test.

METHODS: This study was a cross-sectional study of 2 groups. The first group was 110 children who had type 1 diabetes, were aged 5 to 10 years, and had a regular follow-up in the pediatric diabetes outpatient clinic in Elminia University Hospital. The second group consisted of 110 children (as a control group without diabetes) who were age and gender matched from the pediatric outpatient clinic in Elminia University Hospital. The children were subjected to tuberculin skin test and Ziehl Neelsen staining on sputum. The children with diabetes only were subjected to chest radiograph. The children's sera were subjected to MycoDot test.

RESULTS: Among the 110 children with diabetes, 6 (5.5%) were determined to have positive tuberculosis results using the MycoDot technique. Only 1 (0.9%) control patient was determined to have a positive tuberculosis result using the same test. Among the children with diabetes (110), 4 (3.8%) were found to have positive tuberculosis results by tuberculin skin test, whereas 2 (1.8%) were found to have positive tuberculosis results by Ziehl Neelsen staining on sputum.

CONCLUSIONS: Many studies have explored the association between diabetes and tuberculosis. In developed countries, studies dating to the first half of the 20th century demonstrated considerable increase in the frequency of tuberculosis among patients with diabetes, although the proportion with comorbidity ranged widely from 1.0% to 9.3%. Other studies have shown a higher frequency of diabetes among individuals with tuberculosis. In our results, 5.5% of children with diabetes had tuberculosis by MycoDot test, which is a simple and reliable test, whereas only 1 (0.9%) positive result was found in the group without diabetes by the same test. The former indicates that risk for tuberculosis increases among children with diabetes, which indicates that regular screening for the presence of active tuberculosis among children with diabetes should be conducted.

STUDY ON THE DAMAGE OF CULTURED HIPPOCAMPAL NEURONS INDUCED BY SEIZURE-LIKE DISCHARGE AND THE EFFECT OF BRAIN-DERIVED NEUROTROPHIC FACTOR ON THE INJURED NEURONS

Submitted by Li Jiang

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OBJECTIVE: The objective of this study was to observe the damage of cultured hippocampal neurons induced by seizure-like discharge and study the effects of brain-derived neurotrophic factor (BDNF) on such injury.

METHODS: Primary cultured hippocampal neurons were randomly divided into 3 groups: (1) control group: cultured neurons were exposed to regular extracellular solution for 3 hours, then returned to regular medium; (2) seizure-like discharge group: cultured neurons were exposed to magnesium-free extracellular solution for 3 hours, then maintained for 24 hours in regular medium; and (3) BDNF-treated group: cultured neurons were precultured with regular medium added to BDNF (200 ng/mL) for 24 hours and exposed to magnesium-free

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extracellular solution for 3 hours, then maintained for 24 hours in regular medium that contained BDNF. The morphologic changes of neurons dyed by acridine orange/ethidium bromide were observed. Mitochondria membrane potential (MEP) by JC-1 dye was assessed with laser scanning confocal microscope. Lactic acid dehydrogenase (LDH) in supernatant was detected by autobiochemical analyzer. BDNF was detected by immunocytochemistry and assessed by optical density.

RESULTS: There were some apoptotic and necrotic neurons in the seizure-like discharge group. Compared with the control group, MEP was significantly decreased and LDH level and BDNF expression were significantly increased in the seizure-like discharge group. Compared with the seizure-like discharge group, MEP was significantly increased and LDH level was significantly decreased in BDNF-treated group, but there was no significant difference on BDNF expression between them.

CONCLUSIONS: Seizure-like discharge could induce injury to hippocampal neurons and could upregulate BDNF expression in hippocampal neurons. BDNF could relieve the damage of neurons induced by seizure-like discharge, so BDNF has protective effects on hippocampal neurons.

EFFECTS OF VITAMIN A ON LUNG DEVELOPMENT IN THE RAT FROM EARLY AGE TO ADULTHOOD

Submitted by Ting-Yu Li
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INTRODUCTION: Epidemiologic studies show that nutritional deficiency can alter lung development and have later adverse effects on lung function and respiratory health. Vitamin A is an important nutrient and is considered important in lung development and maturation. Additional studies are required to address whether vitamin A deficiency adversely affects lung development from early age to adulthood and whether such effects can be blocked or reversed.

OBJECTIVE: Our aim was to study the effect of vitamin A on lung development in the rat from early age to adulthood.

METHODS: Female rats were divided into control, marginal vitamin A deficiency (MVAD), and vitamin A intervention (VAI) groups. Control dams and pups were fed a normal diet (6500 U/kg vitamin A). MVAD rats were fed an MVAD diet (400 U/kg vitamin A). VAI rats were fed an MVAD diet until the birth of the pups and thereafter were fed with normal diet while the pups were given vitamin A through intragastric administration. All pups were killed at 8 weeks of age. Blood serum vitamin A levels were measured. Lungs were weighed and stained for light microscopy.

RESULTS: The vitamin A level of the MVAD group was lower than that of the control group. Lung weight of MVAD rats was lower than that of the controls. Morphometric measurements showed that the alveolar number in MVAD rats was less than that of the controls, and alveolar septa were thicker than those of the controls. All results in VAI group were better than those in the MVAD group and showed no difference from the controls.

CONCLUSIONS: Vitamin A status in early life can affect the lung development from early age to adulthood. Such effects can be reversed by dietary intervention after birth.

MARGINAL VITAMIN A DEFICIENCY IN PREGNANCY CAN INDUCE MEMORY DEFICIT IN ADULT OFFSPRING

Submitted by Ting-Yu Li
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INTRODUCTION: Vitamin A deficiency in pregnancy has a negative impact on the development of offspring; however, little is known about the effect of maternal marginal vitamin A deficiency (MVAD) on the function of the central nervous system in children later in postnatal life.

OBJECTIVE: We investigated whether MVAD during the gestational period can cause learning and memory impairment of adult offspring.

METHODS: There were 2 offspring groups: an experimental group that had MVAD only in pregnancy and a control group. Serum vitamin A was monitored by high-performance liquid chromatography. Both groups were trained by Marris water maze task at 8 weeks of age. The hippocampal CA1 long-term potentiation was detected by electrophysiologic technique, and the free calcium ion concentration in cells was examined by confocal laser scanning microscopy.

RESULTS: No significant difference in the serum vitamin A level was observed between the 2 groups; however, the escape latency of the experimental group (10.50 $\pm$ 1.58 seconds) was longer than that of the control group (8.75 $\pm$ 1.19 seconds) in the behavior test. Correspondingly, the changes of field excitatory postsynaptic potentials slope of the experimental group (29.5% $\pm$ 4.6%) was significantly less than that of the control group (57.5% $\pm$ 8.6%), and the lower relative intensity of fluorescence in cells was seen in the experimental group (85.8 $\pm$ 17.1) compared with the control group (113.6 $\pm$ 20.5) after the tetanus stimulation.

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