83 HISTOMORPHOMETRIC STUDY OF BONE IN IDIOPATHIC OSTEOPOROSIS OF THE YOUTH

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Idiopathic juvenile osteoporosis is a rare bone disease of unknown pathomechanism. Results of bone histomorphometry are scant and controversial. Knowledge of bone resorption and formation values could allow to choose appropriate treatment.

Transiliac bone biopsy was done after double tetracycline labeling in 25 osteoporotic children aged 4 - 16.5 years before treatment. Histomorphometry of trabecular bone was performed.

Markedly reduced amount of bone (Vvb%) proportional to the severity of the disease was found. At the same time the parameters of bone formation (osteoid volume, surface and thickness, osteoblasts surface) as well as the bone resorption (total resorption surface) did not differ from the control group. Mineralization rate was undetectable in trabecular but normal in cortical bone.

We conclude the bone regeneration of the juvenile osteoporotic patients is insufficiently stimulated or inhibited in the face of bone loss. Methods of treatment ought to stimulate the bone formation rather then to inhibit the bone resorption.

84 DECREASED RECEPTOR AVAILABILITY IN ABNORMALLY FLUID MEMBRANES OF NONMUSCLE CELLS IN MYOTONIC DYSTROPHY (MD).

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Decreased diphenylhexatriene fluorescence anisotropy values in MD mononuclear cells (0.163±0.017, x±SD, n= 13; controls: 0.181±0.013; $p<0.01$, U-test) and platelets (MD: 0.087±0.017, n=9; controls: 0.137± 0.015; $p<0.001$) indicate an increased plasma membrane fluidity in MD. Normal serum osmolality and simultaneously increased vasopressin plasma levels (MD: 7.4±2.1 pg/mL, n=12; controls: 4.5±1.4 pg/mL; $p<0.0005$) indicate reduced vasopressin sensitivity in MD. Specific binding of vasoactive intestinal peptide ($[^{125}I]$VIP; MD: 2.9± 0.9% per 10^6 cells, n=8; controls: 5.2±1.6%; $p<0.005$) and VIP receptor affinity (MD: K_d=0.26±0.05 nM, n=8; controls: K_d=0.19±0.02 nM; $p<0.005$) were decreased in MD mononuclear cells. Our data suggest a decreased receptor availability most likely caused by a displacement of these receptors in the abnormally fluid plasma membranes of MD nonmuscle cells. This pathophysiological hypothesis explains several endocrine defects described in MD. (DFG grant Hu408/1-4)

85 VISUAL ACUITY AND VISUAL FIELD AFTER CRYOCOAGULATION FOR RETINOPATHY OF PREMATURITY (ROP).

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The effect of cryocoagulation on visual functions in very low birth weight (VLBW) infants with ROP stage 3 is not well known. The development of binocular visual acuity and visual field was assessed using acuity cards and kinetic perimetry in the first year of life at 3-monthly intervals in 10 infants with ROP stage 3 treated with cryocoagulation. All had retinopathy over at least 240 degrees without macular involvement. They belonged to a group of 230 surviving VLBW infants of whom 25 were diagnosed with ROP (9 stage 1, 1 stage 2, 11 stage 3, 4 stage 4). Results were compared to norm values obtained in preterm infants: at the age of 1 year 7 infants showed normal development of visual acuity and visual field; 3 had decreased visual acuity and objective refraction revealed severe myopia; 1 of them had also abnormal visual field. These results suggest that in VLBW infants cryocoagulation in case of ROP stage 3 has no obvious deleterious effect on the development of visual acuity and they support the indication for cryocoagulation. The effect on the development of visual field needs further investigation.

86 THE EFFECT OF NEONATAL PERIPHERAL NERVE SECTION ON NEUROPEPTIDE IMMUNOREACTIVITY IN THE RAT LUMBAR DORSAL HORN.

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Peripheral nerve section in the adult rat produces long lasting depletion of some neuropeptides in the central terminals of the spinal cord (Brain Res., 205 (1981) 289-298). We have investigated the effect of such injury in the neonatal period on neuropeptide immunoreactivity in the dorsal horn. Sciatic nerves were unilaterally cut and ligated at day 0 and day 7 postnatal and sections from lumbar spinal cord stained 4-60 days later. Immunocytochemical staining demonstrated the presence of substance P and calcitonin-gene-related peptide in laminae I-III of the control side of dorsal horn from day 0 and met-enkephalin after day 7. Sciatic section at postnatal day 0 produced barely detectable neuropeptide depletion at any stage examined, whereas 10 days after section at day 7, depletion was comparable to that seen in the adult. Met-enkephalin depletion was not seen at any stage. These results show a considerable plasticity of peptide containing primary sensory afferents, present only during the first postnatal week.

87 OXYGEN RADICALS STIMULATE DOPAMINE (DA) RELEASE FROM RAT STRIATAL SYNAPTOSOMES

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We studied the effect of Hypoxanthine (Hx) and Xanthine Oxidase (XOD) on release of [3H]-DA from rat striatal synaptosomes. Synaptosomes were isolated through centrifugation, labelled with [3H]-DA, recentrifuged and the pellets P2 were used. Hx and XOD, alone or with scavengers, Catalase (CAT) and Superoxide Dismutase (SOD), were added before incubation of the P2. Spontaneous and K^+-evoked (50 mM) release were measured using a filtration method:
[Incubation 10 min, 37°C, Hx: 0,25 mM/l, XOD: 24 mU/ml, (n)]

Incubation mode	Relation to P2	K^+ release in %
P2 alone	100	45±11 (12)
P2+Hx+XOD	51±13 (12) *	29±19 (12) *
P2+Hx+XOD+CAT (20 U/ml)	80±21 (6) #	40±17 (6)
P2+Hx+XOD+SOD (200 U/ml)	62±16 (6) *	34± 7 (6) *
P2+Hx+XOD+CAT+SOD	89±10 (4) #	39± 5 (4) #

$p<0.05$: *Compared to P2 alone, #Compared to P2+Hx+XOD

These results suggest that oxygen radicals, especially H_2O_2, may alter neurotransmitter functions. This could represent a neurochemical basis of behavioral changes observed in newborns during and after a hypoxic episode.

88 BEHAVIORAL PROBLEMS IN CHILDREN EXPOSED TO AMPHETAMINE DURING FETAL LIFE

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Sixtyfive surviving children (CH) whose mothers abused amphetamine during pregnancy have been followed prospectively since their birth in 1976-77. At 1,4 and 8 yrs the CH were tested in their home by the psychologist LB Information has been collected continuously about social factors and support given. After 10 yrs 46 CH have been placed in fosterhomes (13 since birth). At 1 yr symtoms of emotional disturbances were diagnosed in 20%. At 5 yrs aggressiveness and hyperactivity were found in 40%. 15% were considered in need of support and 25% to be at risk. At 8 yrs aggressive behaviour and peer-related problems occurred in 40% of the CH. 20% were considered to need support and 20% to be at risk. At 4 yrs there was a significant correlation between aggressive behaviour and the extent of amphetamine intake(amount as well as exposure length). At 8 yrs this significance was higher. No significant correlation could be found with a number of social factors, such as foster care. There was a low correlation between investigation at 1 and 4 yrs but stat.sign.for aggressiveness betw.4 and 8 yrs.