Wrist joint ligament length changes in flexion and deviation of the hand

antigens (SSEA) and with alkaline phosphatase (AP) histochemistry were presented.
At E16 SSEA 1 was found in the rostro-lateral and in the dorso-medial MBH. From E18 onwards SSEA 1 was found periventricular in the prechiasmatic area, the suprachiasmatic, peri- and paraventricular nuclei, periventricular in the retrochiasmatic area and in the mammillary bodies. This developmental shift of SSEA 1 from lateral to medial probably represents a differentiation gradient within the MBH. At E12 AP reactivity was uniformly distributed through all layers of the neural tube. From E12 to E18 a dorsoventral and a rostrocaudal gradient of increasing AP reactivity was found in the hypothalamic area. At E20 most AP reaction product has disappeared from the hypothalamic area, some residual reactivity is found in the dorsal periventricular hypothalamus. AP activity is thought to be a marker of the activity of the ventricular matrix.

In the intermediate lobe of the hypophysis a zonal pattern was observed for both AP and SSEA 1. Alternately labeled bandlets of cells in the posterior epithelial layer of this lobe give the impression of a longitudinally zonated pattern. The appearance of such a pattern in the intermediate lobe of the hypophysis is unique.

WRIST JOINT LIGAMENT LENGTH CHANGES IN FLEXION AND DEVIATION OF THE HAND

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The passive stability of the wrist is ensured by capsule, ligaments and the geometry of the articulating carpal bones. In the clinical literature, carpal instabilities are usually related to lesions of the ligamentous structures. The purpose of the present study is to evaluate the precise 3-dimensional motions of the carpal bones in flexion and deviation of the hand, and to study ligament functions.

Tests were carried out on five human specimens. A minimum of three tantalum pellets, 0.5-1.0 mm diameter, were inserted in the seven carpal bones. Five ligaments, four palmar (radio-capitate (RCP), radio-lunate (RLP), lunato-triquetrum (LTP), triquetro-capitate (TCP)) and one dorsal (radio-triquetrum (RDT)), were marked with tantalum pellets in addition, using two different methods, accounting for fibre curvatures: a) by glueing 0.5 mm tantalum pellets at intervals along the fiber bundles over the ligament lengths, and b) by glueing a silicon string, filled with tantalum pellets at intervals, over the ligaments.

It was found in precision tests that the relative length changes (strains) could

be determined with a 0.3% standard deviation. Although the two strain descriptive methods (a-b-c) studied gave quantitatively different results, the tendencies were equal. Equal trends were also observed in the different specimens. Changes of ligament length did not exceed 30%, relative to the neutral position, in any of the cases. In dorsal flexion the palmar ligaments RLP, RCP and TCP increased in length, and in palmar flexion they decreased. The dorsal RTD showed an inverse behavior. The palmar LTP remained practically unchanged. In deviation of the hand, the palmar LTP remained unchanged again. The RCP increased in radial and ulnar deviation, while the TCP and the RTD both decreased. The RLP tended to decrease in length from ulnar to radial deviation.

These consistent quantitative findings invalidate earlier qualitative speculations on carpal ligament functions. This is probably caused by invalid assumptions about carpal motion axes, which were usually believed to be fixed to the bone geometry.

THE DIGEORGE SYNDROME IN RELATION TO THE CARDIAC OUTFLOW TRACTS AND THE NEURAL CREST

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The DiGeorge syndrome is a birth defect, in its complete form characterized by thymic and parathyroid gland agenesis or hypoplasia (clinically recognizable by immunologic deficiencies and by hypocalcemia), abnormal facies and almost invariably cardiovascular anomalies. The latter comprise in particular: Interruption of the distal Aortic Arch (isthmus), usually with infundibular malalignment ventricular septal defect (IAA), Persistent Truncus Arteriosus (PTA) and Tetralogy of Fallot (TOF).

Embryologically these three groups can be defined as cardiac outflow tract anomalies, resulting from abnormal development of the branchial arterial system c.q. the aortopulmonary septum and/or the outlet septum.

We performed a retrospective study of our postmortem material (deemed to be rather incomplete because of the frequently neglected examination of the cervical organs at the time of autopsy). We confined to the thymus (the parathyroids being too small to supply reliable data), and therefore did not include TOF because many of those specimens were from patients older than 1 year, when the thymus is already in involution.

We found the cervical organs intact in 18 of 23 specimens with IAA, and in 10 of these 18 cases the thymus was absent or definitely hypoplastic. In PTA this was noted in 6 of 19 cases. This indicates that a number of cases with IAA and with PTA belong to the combined aortic arch/pharyngeal pouch syndrome. The