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A DISORDER OF OESTROGEN METABOLISM AS A CAUSAL FACTOR OF CONGENITAL DISLOCATION OF THE HIP

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It is widely believed that the primary cause of dislocation of the hip in newborns is congenital dysplasia of the joint. An objection that can be raised against this concept, however, is that the dislocation is present already at birth and that undelayed treatment for a relatively short time is sufficient to prevent the development of dysplasia. In animals, however, experimental dislocation of the hip will be followed by dysplasia. In congenital dislocation of the hip the capsule is elongated, and it is this elongation that enables the femoral head to slip out of the acetabulum. This relaxation of the capsule appears to be secondary to generalized instability of the pelvis, a widening of the pubic symphysis being roentgenologically demonstrable in the presence of such a dislocation. This instability disappears within a few days (1). A similar instability of the pelvis ("pelvic insufficiency") is not uncommon in pregnant women, and it is believed to be due mainly to an excessive oestrogenic effect.

It was therefore thought that the instability of the symphysis demonstrable in newborns with congenital dislocation of the hip might be of similar origin. According to *Diczfalusy*, oestriol is the only hormone excreted by newborns and the amount excreted diminishes to very low values within the first few days of life (2, 3). *De Blieck* and *Schwers* found that newborn girls excreted twice as much oestriol as newborn boys (4).

The excretion of oestrogen metabolites by two newborn girls with congenital dislocation of the hip and by seven healthy newborn girls from the second to the fifth or sixth day of life are compared below. The oestrogen was determined by the method of *Brown* (5).

TABLE 1

Excretion of oestrogen metabolites in 7 normal new-born girls and in 2 cases of congenital dislocation of the hip, both new-born girls. The amout of oestrogen is given as microgr./24 hours.

	Case No.	normal new-born girls 1	2	3	4	5	6	7	cases of cong. disloc. 8	9
Oestriol										
Day of life	2	257	70		176		655	586	484	169
	3		111	119	3	115		122	45	70
	4	13				8		25	7	7
	5		12					11	1.5	
	6							5	3	
Oestrone										
Day of life	2	0	0		0		1.2	0.6	4.1	3.6
	3		0.9	0	0	0.1		0.6	0	2.3
	4	0				0.4	0.6	0.2	1.4	1.3
	5		0					0	0.3	
	6							0	0	
Oestradiol-17β										
Day of life	2	0	0		0.2		0	0.5	3.6	1.8
	3		0	0	0.4	0.1		0.4	3.2	1.4
	4	0				0	0.7	0.2	1.8	0.9
	5		0					0	0.2	
	6							0		

The excretion of conjugated oestriol was of the same order in both groups. The excretion diminished rapidly. The urine from the controls contained only traces of conjugated oestrone and oestradiol-17β, but the excretion of these oestrogens was appreciably higher in the infants with congenital dislocation of the hip, and this increase persisted for at least the first four days of life. This increase supports the assumption that congenital dislocation of the hip may be secondary to a derangement of the oestrogen metabolism, particularly since oestrone and oestradiol-17β are the most active oestrogens.

Further studies, including investigation of the metabolism of exogenous oestrogen, are in progress.

SUMMARY

Analysis of urine from newborns with congenital dislocation of the hip showed a disorder of oestrogen metabolism. It is assumed that this

metabolic disorder plays a rôle in the causation of this disease of the hip.

RESUME

L'analyse de l'urine des nouveaux-nés chez lesquels a été constatée une dislocation congénitale de la hanche fait apparaître un trouble du métabolisme oestrogène. Il est prétendu que ce trouble du métabolisme joue un rôle dans la cause de cette maladie de la hanche.

ZUSAMMENFASSUNG

Durch Harnanalysen bei Neugeborenen mit angeborener Hüftgelenksverrenkung konnte eine Störung des Oestrogenstoffwechsels nachgewiesen werden. Es wird angenommen, dass diese Stoffwechselstörung bei der Entstehung dieses Hüftleidens eine ursächliche Rolle spielt.

REFERENCES

1. *Andrén, L.:* Acta Radiologica, *54*, 123, 1960.
2. *Diczfalusy, E., Tillinger, K.-G.* & *Westman, A.:* Acta endocrinol. *26*, 303, 1957; *26*, 313, 1957.
3. *Diczfalusy, E.:* Bull. Soc. Royale Belge de Gynécologie et d'Obstétrique, *28*, 459, 1958.
4. *Blieck, J. de* & *Schwers, J.:* Bull. Soc. Royale Belge de Gynécologie et d'Obstétrique, *28*, 476, 1958.
5. *Brown, J. B.:* Biochem. J., *60*, 185, 1955.