The mean nuclear diameter and its mean DNA content in the kidney of the Indian water buffalo at different temperatures

No. of nuclei	Temperature (°C)	Mean nuclear diameter (μ)	Mean DNA content (S.E.)	Difference between means	*t*-value	*P*
71	5	6.36 ± 0.61	268.42 ± 9.55 (A)	A vs. B = 121.65	7.23	< 0.001
40	18	6.53 ± 0.60	390.07 ± 14.67 (B)	A vs. C = 262.96	11.20	< 0.001
42	25	6.62 ± 0.64	531.38 ± 25.93 (C)	B vs. C = 141.31	4.67	< 0.001

Staining reaction started within a minute of staining at all the different temperatures. Optimal staining was attained within 15 min at the different temperatures. Speed of reaction thus remained the same no matter at what temperature the slides were stained. The DNA values at different temperatures are presented in the Table. From the Table it is apparent that there is a progressive increase in the amount of DNA at temperatures from 5–25 °C, the optimum amount of DNA being at the maximum temperature used in this investigation. These findings are in agreement with those of ATKINSON[7] who has noted a gradual increase of the amount of dye reformed with Schiff reagent and formalin by colorimetric method at temperatures of 5–39 °C. Within the range studied by him the relationship was linear[8].

Zusammenfassung. Die Feulgenfärbung geht umso besser, je höher im Bereich von 5–25 °C die Temperatur ist. Als Material wurde Wasserbüffelniere verwendet.

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[7] W. B. ATKINSON, Stain Technol. *27*, 153 (1952).

[8] The author wishes to record his appreciation to Prof. B. R. SESHACHAR for providing necessary facilities to carry out this investigation.

'Paradoxical Microgyric Cortex' Associated with Intrauterine Hydrocephalus

A little-noted fact found in association with hydrocephalus which has begun during intrauterine life, in human subjects, is the microgyric cortex. The term microgyric is used here to define small gyri with normal cortical lamination as is usually found with intrauterine hydrocephalus, and does not mean abnormal cortical lamination pattern as is sometime implied (CROME[1]).

In the course of examination of 56 hydrocephalic human brains associated with the Arnold-Chiari malformation, both at the Fountain Hospital, Tooting, London, in the laboratory of Dr. L. CROME, and in the neuropathological laboratory of Prof. W. H. MCMENEMEY, at the Maida Vale Hospital, London, there was noted in every case the presence of this microgyric pattern.

[1] L. CROME, J. Path. Bact. *64*, 479 (1952).

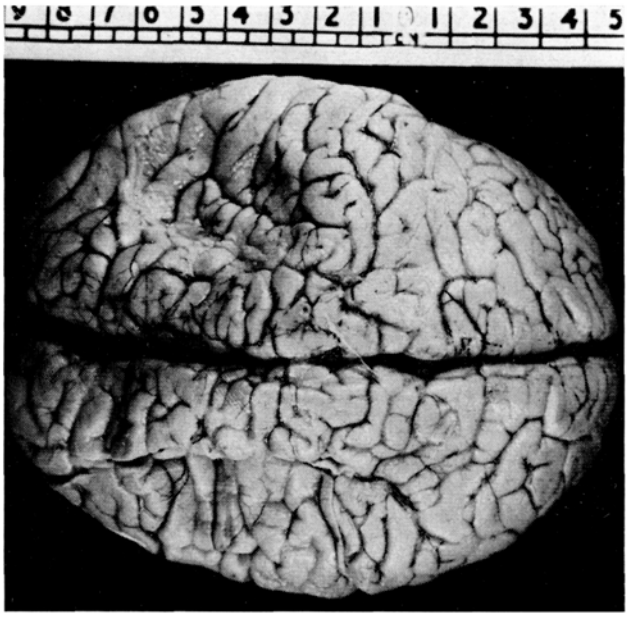

Fig. 1. The superior part of the hydrocephalic brain of a new-born human presenting with the Arnold-Chiari syndrome, showing the microgyric cortex.

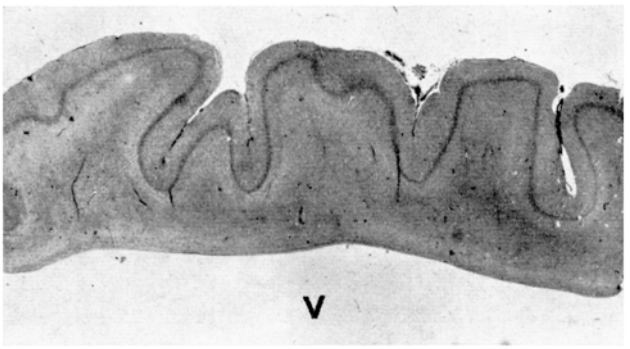

Fig. 2. Small cortical gyri in the parietal lobe of a new-born human infant. The letter V indicates the lateral ventricle and serves to demonstrate the thinness of the cortical wall. Hematoxylin-eosin. × 3.9.

The qualifying term 'paradoxical' can be applied to this type of microgyric cortex found in association with intrauterine hydrocephalus, if one would expect to find gyri wider than normal, flattened by the increasing volume of fluid in the ventricular system, as is usually found in hydrocephalus of sufficient severity which has begun after birth, and not during intrauterine life. It is known that the association of neural malformations known as the Arnold-Chiari syndrome can appear early in fetal life (DUCKETT[2]). It is therefore presumed that the first steps in the production of the hydrocephalus are occurring simultaneously with the formation of gyri. Thus, the cerebral cortex would be prey to a derangement of the gyriformative mechanisms, which would result in the formation of many small gyri as a compensative factor for the abnormal dilation of the developing brain.

Résumé. Le cortex cérébral, dans les cas d'hydrocéphalie ayant débuté durant la vie foetale, offre de petites circonvolutions. Il est surprenant qu'un cerveau qui grossit à la suite d'une pression excessive présente de petites circonvolutions au lieu de grosses circonvolutions aplaties contre la surface interne du crâne. Cette microgyrie paradoxale associée à l'hydrocéphalie indiquerait une origine prénatale.

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7 May 1968.

[2] S. DUCKETT, Acta Neuropath., Berlin *7*, 175 (1966).

Extracorporal Development of Quail Oocytes

The homograft reaction does not develop in the embryo until a late stage. Therefore experimental embryologists and pathologists have been able to demonstrate growth on the chick chorioallantoic membrane of normal animal tissues and of a variety of tumours, some of which have also been cultured in vitro[1].

In the present work it has been observed that very young oocytes of quail embryos may develop normally into ovarian tissue, when cultured in vitro for some time and subsequently transplanted on the chick chorioallantoic membrane.

Fertile eggs from japanese quail (*Coturnix coturnix japonica*) are incubated at 39 °C. After 10 or 13 days of incubation, the left ovary of the female embryos is removed. Its central part is excised and cultivated for 5 or 24 h on agar jelly, according to the technique of WOLFF and HAFFEN[2]. These fragments are thereafter transplanted on the chorioallantoic membrane of 7-day-old chick embryos according to the method of HARRIS[3].

After 11 days of growth on this living substrate, the fragments of quail ovary are fixed in acetic alcohol (1:3) at 4 °C for 18 h, embedded in paraffin and sectioned at 5 μ thickness.

After deparaffination and rehydration, the sections are coloured with an aqueous solution of $1^0/_{00}$ toluidin blue. The cortex of the ovarian transplants contains normally developed intrafollicular oocytes at the stage of previtellogenesis (Figure 1).

Their aspect (Figure 2) is similar to that of the oocytes found in young female quails of corresponding age. The

[1] C. P. DAGG, D. A. KARNOFSKY and J. RODDY, Cancer Res. *16*, 589 (1956).
[2] ET. WOLFF and K. HAFFEN, Texas Rep. Biol. Med. *10*, 463 (1952).
[3] J. J. HARRIS, Ann. N.Y. Acad. Sci. *76*, 764 (1958).

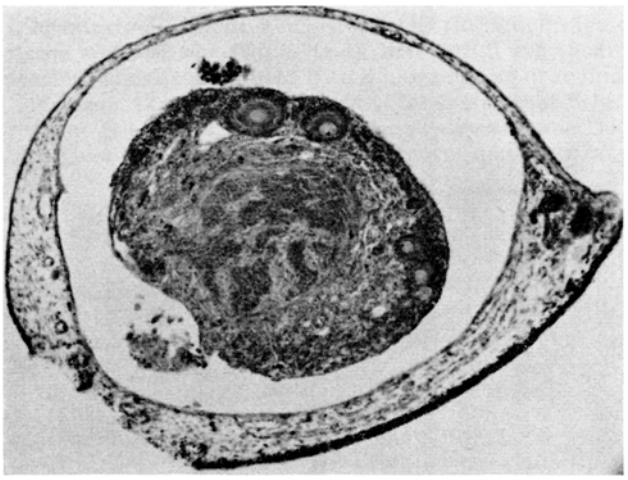

Fig. 1. Section through a piece of ovary removed from a 10-day-old quail embryo, cultured for 5 h in organ culture and grown in a chick chorioallantoic membrane during 11 days. The cortex contains several well-developed intrafollicular oocytes. × 110.

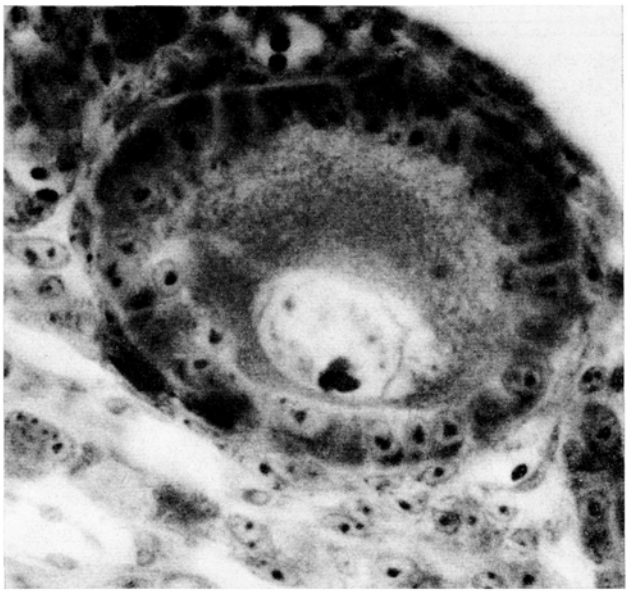

Fig. 2. High power view of one of the oocytes of Figure 1. Primary polarity, by eccentric position of the germinal vesicle in the oocyte, is obvious. The nucleolus presents vacuolization and epinucleolar buds. The follicle cells and other somatic cells contain a large central or subcentral chromatin granule. × 1000.