CHROMOSOMAL STUDY OF HYDATIDIFORM MOLES

by

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The etiology of hydatidiform mole is unknown even at the present day. There is still a difference of opinion as to whether it is to be considered a degenerative or a neoplastic leison. Perhaps there is more than one method of genesis. One of the recent views is hydatidiform mole may be related to a chromosomal anomaly generally triploidy. Carr (1965) Makino *et al* (1964), Beischntr (1967) and many other workers have reported various chromosomal abnormalities associated with hydatidiform mole.

In the present paper chromosomal study of 10 hydatidiform mole cases has been performed and along with this as a control chromosomal character of 10 other normal pregnancy cases have also been studied.

Trophoblastic tissue was collected after evacuation of hydatidiform mole in a test tube containing colchicine. Within one hour of collection the tissues were prepared for chromosomal study. In case of normal pregnancy, placental bits were collected similarly from hysterotomy cases. Thus trophoblastic tissues of 10 hydatidiform mole cases and another 10 normal pregnancy cases were studied for chromosomal pattern.

Preparation on Tissue for Chromosomal Study

Direct air dried procedures (Martinean 1966) was adopted in all the cases as follows:

Fresh tissue fragments are placed in a culture medium (TC 199) containing 1 mg./ml colchicine and cut up finely.

The mixture is then incubated for 2 hrs. at 37°C.

The medium is then replaced by 0.95%. Nacitrate solution and kept at room temp. or 37°C for 25 minutes.

The supernant is then replaced by fixation (1 part glacial acetic acid and 3 parts methyl alcohol.

Next, the cells are suspended in 45% acetic acid and air dried preparations are made.

Table I shows the short history of all the 10 H. Mole cases with the findings of chromosomal pattern. Of 10 cases, 3 patients were Muslims and 7 were Hindus. Muslim patients were specially reported since consanguinous marriage is common

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TABLE I

Analysis of the H. Mole Cases

No.	Religion	Age in yrs.	Parity	Size of ut.	Treatment done	Chromosomal pattern
I S.P.	H	26	P1+0	24 weeks	Evacuation with ovum/ forceps	46 XX aneuploidy ++
II S.D.	M	28	P2+0	16 „	D.O.	46 XX
III S.D.	H	23	P1+0	18 „ with Vag. metastasis	Suction Eva.	45 x 0 aneuploidy ++
IV H.M.	M	25	P2+0	34 weeks	S.E.	46 XX aneuploidy +
V S.S.	H	26	P2+2	20 „	S.E.	45 x 0 aneuploidy ++
		(Repeated	Mole)			
VI A.S.	H	24	P2+0	18 „	S.E.	46 XX aneuploidy +
VII F.B.	M	20	P1+0	20 „	D + E	45 x 0
VIII B.D.	H	21	P0+0	16 „	S.E.	45 x 0
IX A.D.	H	16	P0+0	20 „	S.E.	46 XX aneuploidy +
X F.C.	H	19	P1+ 0	16 „	S.E.	46 XX

among the Muslims and thus to find any effect on the chromosomal pattern. The age of these patients were all within 30 years. The youngest one was 16 years only. Parity varied from P_0 to P_2 and height of the uterus was from 16 to 34 weeks size of pregnancy. In 1 case (case V) there was 2 repeated H. Mole. Out of total 10 H. Mole cases, in 4 cases the chromosomal pattern was 45 x 0 and in 6 cases it was 46 XX. Degree of aneuploidy and random breakage observed. In the repeated Mole cases the Chromosomal pattern was 45 XO. But no trisomy or triploidy was noted in any of these cases.

All the control cases were multipara who were admitted for termination and sterilization simultaneously. The age on an average was 25 to 35 years. Among these only 1 case was Muslim and all other Hindus. In all these cases material was collected while hysterotomy was performed. Among these ten control cases all showed normal Karyotype either 46 XX (in 4 cases) or 46 XY (in 6 cases). A few aneuploid cells observed.

Discussion

Recent studies of cytogenetics of human pregnancy wastage have shown that between 20 and 30 per cent of all abortuses have a chromosomal abnormality (Geneva Conference 1966). The most common single abnormality is the 45 X Group which comprises 20 per cent of all chromosomally abnormal foetuses and 5% of all spontaneous abortions. Triploids are the second most frequent class comprising 16.5 per cent of abnormal foetuses and 4.1 per cent of all abortions (Carr 1966-1967).

It has been reported that the clinical

features of 134 abortuses comprise the three major chromosomal Groups—Trisomic, triploid and 45 X. Hydatidiform or other types of moles are found only in the triploid group where they comprised 23.5% of the recovered abortuses. The most detailed study has been carried out by Carr (1966, 1967).

Makino *et al* (1964) reported triploid (XXY) Chromosome complement in cells cultured from 3 cases of hydatidiform degeneration. Beishner *et al* (1967) reported a hydatidiform mole and a co-existent foetus both of which had a triploid, Chromosome constitution. It thus seems that with hydatidiform degeneration the incidence of polyploidy is high, of the order of 70%. In the present series, out of total 10 H. Mole cases, in 4 the Chromosomal pattern was 45XO, aneuploidy and also random breakage observed. But no trisomy or triploidy was noted in any of these cases. Among the 10 control cases, majority cells showed normal Karyo type 46XX or 46XY. A few aneuploid cells observed.

In an intriguing recent publication Carr has noted that hydropic changes are specially common following discontinuation of oral contraceptives. He refers to the suggestion that women who have recently ceased taking oral contraceptives have an increased propensity to produce polyploid conceptuses which subsequently abort. It has been postulated that this tendency to polyploidy might be due to elevated levels of luteneizing hormones. These have effects on zona pellucida in certain primates and he suggests that it might interfere with the budding of the second polar body, predispose to polyspermy and/or affect clevage of the zygote.

In the present series, neither in the H. Mole cases nor in the control Group except in 1 case there was any history of taking oral contraceptives. In 1 case only the patient had history of oral pills for 6 months only, 2 years before the expulsion of H. Mole. In this case also no polyploidy was noted.

Studies have also been done on the nuclear chromatin pattern of H. Moles and these show a high proportion of chromatin positive cells. (Tominoga and Page 1966). (Baggish *et al* 1968). The question immediately arises as to whether this finding represents a predominance of female conceptuses or is merely a manifestation of polyploidy.

In the present series, in all the 10 H. Mole cases the chromosomal pattern was either 45XO or 46XX and in no case it showed male type of chromosomal pattern while in the control Group in 4 cases only the chromosomal pattern was 46XX i.e. female type and in 6 cases 46XX or male chromosomal pattern.

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