THE
Journal of Obstetrics & Gynaecology of India

Vol. XXXVIII No. 2 APRIL 1988

Editorial

OVARIAN TUMORS IN THE ADOLESCENTS

The diagnosis and management of Ovarian Tumors is an enigma for the practising gynaecologist, more so in the adolescent age-group, where it poses a distinct challenge to the skill and clinical acumen of the gynaecologist. The disease presents late, when it is malignant with 75% of the cases in Stage III or IV, the success rate of the treatment of disseminated disease has been extremely poor. Ovarian tumors have been rightly termed as a spectrum of diseases rather than a single entity. In the age group under twenty years the spectrum is in quite a different order as compared with later ages.

Although the ovaries do not function prior to puberty, they are not immune to development of neoplastic disease. Lindfer reviewed 81 cases of ovarian tumors in adolescents and found that 17 were benign teratomas, 13: malignant teratomas, 11: dysgerminomas and 8: granulosa cell tumors. Breen and Maxson reported that 2/3rd of the ovarian masses in the adolescents were new growths. In women under 20 years of age 58% of ovarian tumors are germ-cell tumors and 65% of these are malignant. In girls under 10, 81% of germ cell tumors are malignant. The overall incidence of malignancy in the adolescents is: 30% as against 15% in the later age group, thus doubling the danger of malignancy in adolescent. The commomest is the Cystic teratoma which is benign, while the Malignant germ-cell tumors of the ovary can be broadly grouped into two types: (1) The lesser malignant: which are Germinomas (Dysgerminomas) and malignant teratomas, and (2) Endodermal Sinus Tumors, Embrional and Chorio Carcinomas which form the anaplastic group.

In the adolescent group unfortunately the definite diagnosis of ovarian tumor and its nature (benign or malignant) is not made as rapidly as in adult, as the abdominal swelling produced by the tumor is more often than not ignored in favour of Gaseous Distension or Obesity or Abdominal Tuberculosis. It is only when the complications like: Hemorrhage in Malignant tumor or Acute torsion set in and the patient presents with "Acute abdomen" is the possibility of the abdominal swelling being Ovarian Tumor entertained. Hence more often than not the diagnosis of an ovarian tumor is made at the time of emergency laparotomy for acute abdominal pain. In Lindfor's series, pain was the main presenting symptom in more than half cases, second most frequent symptom being: Abdominal distension. In his series, torsion of the ovarian tumor was present in 23% of cases. A good surgical principle to be followed is: whenever an ovarian tumor is diagnosed in an adolescent, it must undergo surgical management, even if it is thought to be benign. Ultrasonography is now of considerable use in diagnosis and monitoring intra-abdominal masses. Computerised tomographic (CT) scanning has an advantage

in localising metastases, especially in lungs, CNS, para-aortic nodes. Magnetic resonance when available can be an important additional diagnostic tool in the detection of ovarian tumor. Serum tumor markers are important in the diagnosis and management of patients with malignant ovarian germ-cell tumors: Serum HCG, Alpha-fetoprotein, placental alka ine phosphatase, and lactate dehydrogenase are the useful tumor markers.

Exploratory laparotomy for staging of ovarian tumor is mandatory as adequate treatment is not possible without good surgical staging. At the same time, the local condition of tumor can be determined which is very important for the resultant cure rate. Proper staging of disease should be undertaken by proper palpation of the retro-peritoneal and subphrenic extension. Frozen section biopsies should be carried out during the exploratory laparotomy to stage the tumor correct.y.

As regards surgical management of ovarian tumors in adolescents, the gynaecologist is faced with the dilemma of conservative versus radical surgery. The Cystic teratoma, or a solid well-defined tumor with intact capsule is likely to be benign, and should be dealt with by: Unilateral Oopherectomy with careful inspection of contralateral ovary its bisection and frozen section examination. Subsequent treatment may be considered in the light of the report of the frozen section or later histopathology. Low-grade malignancies like Dysgerminomas and Non-embryonic or Chorionic solid teratomas in stage I are dealt with by Unilateral excision followed by regular ultrasonography or CT scanning.

Radiotherapy and chemotherapy are avoided to prevent the damage to child-bearing. Dysgerminomas in later stages and anaplastic germ-cell tumor are to be treated with Radical debulking of the tumor followed by Chemotherapy with multiple cytotoxic agents. The anaplastic germ cell tumors do not respond well to radiation therapy as well as the single chemotherapy agent and rapidly develop resistance and recurrence producing unsatisfactory results. As many as seven chemotherapeutic agents are used in various schedule forms. The younger patients tolerate the multiple agents chemotherapy we l and survival rate improve from 30% to 70% in the five-year cure rates.

Thus, to summarise: Ovary is never too young or o.d to produce a tumor. Germ cell tumors predominate under 20 years age. Rate of malignancy is double the average in the adolescents. Diagnosis is delayed till complications arise. Benign and low-grade malignant types require unilateral excision only. Anaplastic types require tumor debulking and multidrug anticancer chemotherapy.

V. N. PURANDARE

INTRA UTERINE MALNUTRITION—A CLINICAL AND BIOCHEMICAL STUDY*

By

KAMALA ACHARI, KAPILESHWARI PRASAD SINHA AND BRAJ MOHAN

SUMMARY

Twenty-five neonates who fulfilled the criteria of I.U.M. were studied in relation to placental abnormalities if any and also with regard to associated maternal condition.

RNA/DNA ratio was determined in all cases of intrauterine malnutrition by Schmidt Thaunhansenrs and Schnelder procedure (1957).

Mean placental weight, mean placental volume and mean placental surface areas were found to be significantly lower.

Mean placental RNA/DNA ratio was found to be higher in cases of I.U.M.

No significant histological abnormality was revealed except presence of few placental cells.

Rise in RNA/DNA ratio is peculiar to cases of I.U.M. only and can be considered as realiable index for placental insufficiency.

Introduction

The subject of intrauterine malnutrition is comparatively new one and its study has led to extensive morphologic, histologic and biochemical studies on human placentae. As is usually known the growth of foetus in utero is a function of both seed and soil and is dependent upon the growth potential of foetus and availability of the intrauterine nutrition in the broadest sense to fulfil its potential. Result of these two factors is a wide variation in bud size at any one gestational age and in the state of nutrition of growing foetus.

Although intrauterine growth failure has been ascribed to placental insufficiency due to faulty intrauterine environment, the placentae from these infants are histologically normal (Winick, 1970). The available data indicates that intrauterine growth failure in infants without gross malformation is associated with reduced placental weight, accompanied by fewer cells which are normal in size. There has been yet another approach on this important subject and that is biochemical study of placenta in such cases with regard to their RNA, DNA content. Winick (1970) carried out detailed study on placenta and found that the amount of RNA per cells (RNA/DNA) increases. They therefore, suggested that this in-

**This article has been presented in the XXV All India Obstetrics & Gynaecological Congress —The Silver Jubilee Session in Calcutta in the year 1981.*

From: Department of Paediatrics, Patna Medical College, Patna.

Accepted for publication on 30-10-87.

crease in ratio may be an index of placental insufficiency. Pierre *et al* (1965) have found the following characteristics in the placentae with foetal malnutrition:

1. They are small as compared to gestational age, being of diminished curcumference and thin,
2. They are fibrotic by texture and not infarcted usually,
3. Umbilical cord is small in calibre, has few spirals or none and is limp,
4. The foeto-placental weight ratio is reduced,
5. Microscopic finding is similar to normal.

Material and Methods

25 neonates who fulfilled the standard criteria of I.U.M. were studied with particular reference to their relation to corresponding maternal condition. Placentae from all these 25 mothers were studied in detail including biochemical study.

All the 25 mothers were subjected to study which included full obstetric history of other siblings besides full clinical systemic examination to detect presence or absence of heart disease, chronic lung and renal diseases etc. Whenever necessary routine and special investigations were done which included blood sugar estimation and serological test like WR and VDRL of mothers blood. All the babies were assessed and examined thoroughly to determine the degree of malnutrition. Condition of skin especially desquamtion, peeling of skin, presence or absence of meconium staining and degree of subcutaneous wasting suggestive of placental insufficiency were looked out for.

Placentae in all these 25 cases were studied in detail which included inspection, record of weight, determination of volume and surface area. Any abnormality of the placentae including insertion of the cord were noted. All these

TABLE I

Showing Placental and Newborn Averages in Newborn Having Features of Intrauterine Malnutrition at Birth

	Sex	No. of cases	Mean	S.D.
Newborn wt. in gm.	Male	10	1753.5	521.03
	Female	15	1916.6	256.18
	M & F	25	1851.4	407.23
Placental wt. in gm.	Male	10	347.5	83.04
	Female	15	347.0	46.73
	M & F	25	363.4	64.87
Placental volume in CC	Male	10	333.0	85.6186
	Female	15	358.33	47.3462
	M & F	25	348.2	62.4618
Surface area in Sq. cm.	Male	10	189.7	47.0556
	Female	15	204.46	27.856
	M & F	25	198.56	36.4464
F: P ratio	Male	10	4.990	0.41
	Female	15	5.124	0.22
	M & F	25	5.094	0.24
Placental Coefficient	Male	10	0.198	
	Female	15	0.198	
	M & F	25	0.1962	

placentae were histologically and biochemically examined.

Placental volume was studied by the water displacement method and surface area was measured by means of planimeter.

Observations

Average of babies of IUM which are the results of placental abnormalities like toxaemia, maternal anaemia and abnormally small placenta (225 gm) have been shown. It is clear from the Table I that—

1. Mean newborn wt. is 1851.4 ± 407.23 gm.
2. Mean placental wt. is 363.4 ± 64.87 gm.
3. Mean F : P ratio and placental coefficient are 5.094 ± 0.24 and 0.1962 respectively.
4. When compared to normal full term infant it is apparent that these babies have smaller placenta than normal. The birth wt. and F : P are lower, but there is no marked difference in placental coefficient.

Table III shows that 18 cases (72%) out of 25 cases were in mild group and 5 cases (20%) in moderate and 2 cases (8%) in marked malnourished group.

Table IV shows that the mean placental RNA/DNA ratio in malnourished infant is 0.9308 ± 0.2397. It is statistically significantly increased as compared to normal infants.

TABLE II

Showing Statistical Analysis with respect to Placental Volume and Surface Area

	Type of cases	Mean	S.D.	t	p	Remarks
I. Volume	Normal	486.869	62.71	—	—	Control
	Normal full terms foetus IUM	348.2	62.46	28.29	.001	Statistically significant
II. Surface area	Normal full term foetus	235.967	40.37	—	—	Control
	IUM	198.56	36.44	4.89	.001	Statistically significant
III. Weight	Normal full term foetus	3,102.72	2,866.56	—	—	Control
	IUM	1,837.4	401.23	31.71	.001	Statistically significant

TABLE III

Showing the Group of Cases of Intrauterine Malnutrition According to Clinical Features

Group	Clinical features	No. of cases	Percentage
Mild	Skin changes only	18	72
Moderate	Skin change + low wt. allertness + absence of lanugo hair	5	20
Marked	Wasting, meconium, staining of skin and anorexia	2	8

TABLE IV
Showing Mean RNA/DNA Ratio in Placenta of Malnourished Neonates in Relation to Normal Group

Type of cases	No.	Mean RNA/DNA	S.D.	t and p value
I.U.M.	25	0.9308	0.2397	t = 6.7388
Normal baby (control)	15	0.42	0.2274	p value 0.001

Discussion

This work gave an opportunity to study cases of IUM in relation to placental abnormalities if any and also with regard to associated maternal condition. RNA/DNA ratio considered to be a reliable index of IUM has been determined in all such cases of IUM.

In the present series 25 IUM babies maternal factors responsible for occurrance of IUM were toxaemia of pregnancy (4), maternal anaemia (10), maternal syphilis (2) and remaining 9 cases were born preterm. These 25 cases of IUM showed abnormally small placenta weighing 225 gms. in 4 cases; in rest of the cases the placenta did not show any morphological or histological abnormalities. others have also shown that the placenta of 20 of their growth retarded infants were small by weight than normal. The size dificeit in their series appeared to effect mainly the parenchymal tissue as histologically majority of sections showed no clear cut abnormalities. The overall impression was that the main characteristic feature of this placenta was simply the relative small quantity of villous tissue which was histologically normal. Winick (1970) in his studies did not find any histological changes in placenta. Venden Berg *et al* (1966) noted that the association of intrauterine growth retardation of small placenta may be parallel phenomena rather than a cause and effect as also seen in trisomy 18.

Biochemical analysis of the placenta of these malnourished infants with special reference to RNA/DNA has been subject of great interest. RNA/DNA ratio has been considered as an index of placental insufficiency.

Winick (1970) was first to study the biochemical content of these placenta, with reference to RNA/DNA ratio and he pointed out that RNA/DNA ratio is less than 0.5 in normal placenta, whereas it increases linearly in intrauterine malnourished cases. In present series of cases, RNA/DNA ratio worked out to be 0.9308 ± 0.2397 (p less than 0.001) as against 0.42 ± 0.2274 in normal control. This finding substantiates the finding of Winick and the conclusion that increase in the RNA/DNA ratio can be considered a good index of placental insufficiency.

References

1. Pierre, et al: Am. J. Obstet. Gynec. **91**: 597, 1965.
2. Vanden Berg, B. J. and Yerushalmy, J.: Paediatrics. **69**: 531, 1966.
3. Winick, M.: Paed. Clinic of North America. **17**: 69, 1970.