Original Research Article

Clinico pathological study of gestational trophoblastic disease – A two years study

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Abstract

Introduction: Gestational trophoblastic disease is one of the most fascinating of all the gynecologic neoplasms partly due to their comparative rarity in western hemisphere but also because of their unique status as tumors derived from the tissues of one individual and growing in other. **Aims:** To study and establish the histopathological diagnosis and clinicopathological correlations.**Methods:** A study of 85 cases with gestational trophoblastic disease diagnosed in the Department of Pathology, GIMS District Hospital, KALABURAGI during the period from September 2018 to August 2020. Biopsies and hysterectomy specimens were processed routinely, embedded in paraffin, stained with H&E. Studied as per proforma. **Results:** Maximum cases were in the age group of 21-30 years (52.9%). Common in first, second and fourth pregnancies and in 'A' blood group. Most of the patients belonged to Hindu (72.8%) community. Common presenting symptom was bleeding per vagina (100%). Histopathological examination of specimens revealed hydatid form mole 84.7%, invasive mole 1.17%, choriocarcinoma 4.7%, placental site trophoblastic tumor 1.18% and placental site trophoblastic reaction 8.2%. **Summary & Conclusion:** The incidence of gestational trophoblastic disease was more in the South-East Asian Countries as evidenced from the review of literature, but unfortunately these are the countries where an organized study of these tumors in the form of National Registries as in USA, UK and Japan is lacking. Hence, the diagnosis and follow-up of these patients is essential for the early detection of malignant trophoblastic disease and reduce the mortality rates.

Key Words: Trophoblast, Hydatid form mole, Invasive mole, Choriocarcinoma, Histomorphology, Villi, β-HCG.

Introduction

The present study on gestational trophoblastic tumors now called as Gestational Trophoblastic Disease (GTD) was carried out because GTD is one of the most fascinating of all the gynecologic neoplasms[1], partly due to their comparative rarity in western hemisphere but also because of their unique states as tumors derived from the tissues of one individual and growing in another[2]. These distinctive malignancies are often dramatic and have a history that is intensely interesting[3]. Hertig has referred to gestational trophoblastic neoplasms as "God's first cancer and man's first cure[2].

Gestational trophoblastic disease represents a spectrum of lesions characterized by an abnormal proliferation of trophoblast, including complete mole, partial mole, invasive hydatidiform mole, choriocarcinoma and placental site trophoblastic tumors. All forms develop in association with pregnancy.

These diseases share several characteristics;

- They arise in fetal chorion.
- They produce beta human chorionic gonadotrophin (βHCG).
- They respond well to chemotherapy[1].

The era of realistic understanding of trophoblastic diseases began when there involved a true grasp of both epithelial nature of the trophoblast and the relation of the trophoblast to gestational neoplasia. The importance of gestational trophoblastic neoplasms derives not only from the diagnostic and obstetric management problems they bring, but also from the association of the complete mole with choriocarcinoma and with much more frequent residual post evaluation trophoblastic disease. The partial moles, long held guilty by associations, are innocent of malignant sequelae even through rare instances of locally invasive, non embolic behaviour are on record.

It is accordingly important to distinguish between complete and partial moles, for they are genetically programmed and committed to separate modes of behaviour[3].

The grading of hydatidiform mole and its correlation to the biological behaviour is of importance to the pathologist. Opinions regarding grading is divided some pathologists like Hertig, Sheldon and Driscoll have recommended the grading to predict the biological behaviour of the tumour. Elson and Bagshance concluded that grading is of no value in correlating the biologic behaviour[4].

The use of cytotoxic chemotherapy has drastically improved the prognosis of gestational trophoblastic tumors. The overall survival rate of these patients has jumped from 19%, in the era of surgery alone to 90% and more in the era of chemotherapy [5,6].

Success in the treatment of gestational trophoblastic neoplasm has been achieved in part because of the ability to quantitative serum or urinary human chorionic gonadotrophin. This has become essential for the clinical management of gestational trophoblastic diseases.

Hence clinico-pathologic study of gestational trophoblastic disease was undertaken with relevance to histomorphologic study and to histological grading of hydatidiform moles and clinical correlation.

Aim & objectives

1. To study number of GTD received in the department of pathology, GIMS District Hospital, KALABURAGI for 2 years duration. (Retrospective study from September 2002 to December 2002 prospective study from January 2003 to August 2005).
2. To study pattern of occurrence of GTD in relation to age, mode of presentation, parity, religion and blood group.
3. To study the histomorphological features of GTD.
4. To study the percentage incidence of hydatidiform mole. Invasive mole, choriocarcinoma placental site trophoblastic tumour, placental site trophoblastic reaction in relation to the total gestational trophoblastic disease.
5. To study the percentage incidence of gestational trophoblastic disease in relation to total number of gynaecological tumour received in the Department of Pathology, GIMS District Hospital, KALABURAGI

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Materials and methods

Materials for the present study were received from GIMS District Hospital, KALABURAGI over a period of two years i.e., from September 2018 to August 2020.

The material consisted of 8 hysterectomy specimen and the remaining (77) from expelled products from the uterus, uterine curettings, suction evacuation.

The number of surgical cases received during the period of 8 years was 15,105.

The clinical details were taken from the case sheets in the record room of Government General Hospital and Sangameshwar Hospital, Basaveshwar Teaching & General Hospital, Gulbarga. The details of the gross examination of the specimens were obtained from the histopathology reports from the Department of Pathology for the retrospective study. All information was not available on every patient. The blocks and slides were retrieved from the files on the Department of Pathology. Paraffin blocks were recut the sections being 5µ thick. In the prospective study detailed gross examination of the specimens were done and findings were recorded. Tissues were processed routinely, paraffin blocks were prepared and 5µ thick sections were cut and stained with haematoxylin and eosin. Gestational trophoblastic diseases were classified as per WHO Scientific Group on gestational trophoblastic diseases[7]. Histopathological grading of hydatidifform mole was done as per Driscoll's Grading[4].

The present study consisted of 85 cases with gestational trophoblastic disease diagnosed in the Department of Pathology, GIMS District Hospital, KALABURAGI during the period from Sep 2020 to Aug 2020. The histopathological study of these biopsies and hysterectomy specimens revealed 72 hydatidiform mole, 1 invasive mole, 4 choriocarcinoma, 1 placental site trophoblastic tumor, 7 placental site trophoblastic reaction. A clinico-pathological analysis of these cases was carried out.

Results

A total of 15,105 biopsies were received in the department during the period of 3 years. Among these, 415 were gynecological tumors, of these neoplasms, gestational trophoblastic diseases constituted 20% of gynecological tumors (table-7). Hydatidiform mole form 17.2%, placental site trophoblastic reaction 1.6%, choriocarcinoma 0.97%, placental site trophoblastic tumor 0.25% and invasive mole 0.22% of total gynecological tumors (Table-8). The spectrum of gestational trophoblastic disease included in this study was hydatidiform mole 72 (84.7%), inasive mole 1 (1.17%), choriocarcinoma 4 (4.7%), placental site trophoblastic tumor 1 (1.17%) and placental site trophoblastic reaction 7 (8.2%).

The total number of deliveries encountered in the three years period was 8755. The gestational trophoblastic diseases form 0.96% of deliveries (1:103) (Table-9), the hydatidiform mole form 0.82% (1:121), invasive mole 0.01% (1:8755), choriocarcinoma tumor 0.01 (1:2188) and placental site trophoblastic reaction 0.08 (1:1250) of deliveries (Table-10).

Since the incidence of GTD is generally expressed in relation to total number of deliveries or gynecological tumors rather than total population[39], in the present study GTD, incidence is calculated according to it.

Table-1: Incidence of gestational trophoblastic disease with respect to total number of gynecological tumors

Year	Total No. of gynecological tumors	Total No. of gestational trophoblastic disease	Percentage
Sept. 2002 to Aug. 2003	136	28	20.58
Sept. 2003 to Aug. 2004	133	27	20.30
Sept. 2004 to Aug. 2005	146	30	20.54
Total	**415**	**85**	**20.47**

Table-2: Incidence of Hydatidiform Mole, Invasive Mole, Choriocarcinoma, Placental Site Trophoblastic Tumor and Placental Site Trophoblastic Reaction with Respect to Gynecological Tumors

Year	Gynecological tumor	Hydatidiform Mole		Invasive Mole		Choriocarcinoma		Placental Site Trophoblastic Tumor		Placental Trophoblastic Reaction		Total Gynecological Tumor Disease	
		No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
One	136	24	17.60	--	--	1	0.73	--	--	3	2.2	28	20.50
Two	133	21	15.7	--	--	2	1.50	1	0.75	2	1.5	27	20.30
Three	146	27	18.4	1	0.68	1	0.68	--	--	2	1.30	30	20.50
Total	**415**	**72**	**17.20**	**1**	**0.22**	**4**	**0.97**	**1**	**0.25**	**7**	**1.60**	**85**	**20.40**

Table-3: Incidence of Gestational Trophoblastic Diseases in Relation to Total Number of Deliveries

Year	No. of Deliveries	Total No. of GTD	Incidence	Percentage
Sept. 2002 to Aug. 2003	2828	28	1:101	0.99
Sept. 2003 to Aug. 2004	3011	27	1:111.5	0.89
Sept. 2004 to Aug. 2005	2916	30	1:97.2	1.02
Total	**8755**	**85**	**1:103.2**	**0.96**

Table-4: Incidence of Hydatidiform Mole, Invasive Mole, Choriocarcinoma, Placental Site Trophoblastic Tumor and Placental Site Trophoblastic Reaction (Total No. of Deliveries 8755, Total No. of Years 3)

Type of GTD	No.	Incidence	Percentage
Hydatidiform mole	72	1:121	0.82
Invasive mole	1	1:8755	0.01
Choriocarcinoma	4	1:2188	0.05
Placental site trophoblastic tumor	1	1:8755	0.01
Placental site trophoblastic reaction	7	1:1250	0.08
Total	**85**		

Table-5: Age Incidence of GTD

Age (years)	Hydatidiform Mole		Invasive Mole		Choriocarcinoma		Placental Site Trophoblastic Tumor		Placental Trophoblastic Reaction		Total Gynecological Tumor Disease	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
10 – 20	16	22.2	--	--	1	25.0	--	--	2	28.5	19	22.35
21 – 30	38	52.77	--	--	2	50.0	1	100.00	4	57.1	45	52.94
31 – 40	17	23.6	1	100.0	1	25.00	--	--	1	14.20	20	23.52
41 – 50	1	1.30	--	--	--	--	--	--	--	--	1	1.17
	72		**1**		**4**		**1**		**7**		**85**	

Age incidence

The youngest case encountered in this study was 16 years old and oldest was 45 years. The maximum incidence was observed in the third decade.

Table-6: Parity in Relation to Trophoblastic Tumors

Parity	Hydatidiform Mole		Invasive Mole		Choriocarcinoma		Placental Site Trophoblastic Tumor		Placental Trophoblastic Reaction	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Primipara	13	18.00	--	--	--	--	--	--	--	--
Para-2	36	50.00	--	--	--	--	--	--	--	--
Para-3	2	3.00	--	--	--	--	--	--	--	--
Para-4	19	26.00	--	--	1	25.0	1	100.00	3	75.0
Para-5	2	3.00	--	--	2	50.0	--	--	1	25.0
Para-6	--	--	--	--	--	--	--	--	--	--
Para-7	--	--	--	--	--	--	--	--	--	--
Para-8	--	--	--	--	--	--	--	--	--	--
Para-9	--	--	--	--	--	--	--	--	--	--
Para-10	--	--	1	100.0	1	25.0				
	72	**100.00**	**1**	**100.00**	**4**	**100.00**	**1**	**100.00**	**4**	**100.00**

Parity

The gestational trophoblastic disease was more in the second and fourth pregnancies followed by primi gravida, gravida 5 and above.

Table-7: Relation of Blood Group to Gestational Trophoblastic Diseases

Blood Group	Hydatidiform Mole		Invasive Mole		Choriocarcinoma		Placental Site Trophoblastic Tumor		Placental Trophoblastic Reaction		Total Gynecological Tumor Disease	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
A	10	66.6	--	--	2	13.3	--	--	3	20	15	55.00
B	1	25.0	--	--	1	25.00	1	25.00	1	25.00	4	14.8
AB	1	50.0	--	--	--	--	--	--	1	50.0	2	7.4
O	3	50.1	1	16.6	--	--	--	--	2	33.3	6	22.2
	15		**1**		**3**		**1**		**7**		**27**	

Blood group

Blood grouping was available only in 27 cases, majority of them belonged to A group 15 (55%) followed by group-O i.e., 6 cases (22.2%), blood group-B 4 cases (14.8%), AB 2 (7.4%), Rh positivity was seen in 25 cases (92.5%) and rest were Rh negative (table-13).

Table-8: Symptomatology of Patients with Gestational Trophoblastic Diseases

Type of GTD	Bleeding per vagina	Amenorrhea trimester			Pain	Hyperemesis gravidarum	Toxemia of pregnancy
		1	2	3			
HM	72	72	--	--	54	15	9
IM	1	1	--	--	1	--	--
Chorio-carcinoma	4	4	--	--	3	1	--
PSTT	1	1	1	--	1	--	--
PSTR	7	--	--	--	--	--	--
Total	85	78	1	--	59	16	9
Percent	100	91.7	--	--	69.4	18.89	10.58

Symptomatology

In the present study bleeding per vagina was the main symptom (100%), followed by amenorrhea (91.7%), pain abdomen (69.4%), hyperemesis gravidarum (18.8%) and toxaemia of pregnancy (10.58%). Most of the patients presented with history of amenorrhea in the first and second trimester of pregnancy (91.7%).

Table-9: Diagnosis at Admission

Clinical Diagnosis	Number	Percentage
Hydatidiform mole	43	50.50

Threatened abortion	17	20.00
Missed abortion	15	17.0
Incomplete abortion	02	2.35
Septic abortion	1	1.17
Dysfunctional uterine bleeding	02	2.235
Bad obstetric history	01	1.17
Fibroid uterus	01	1.17
Intrauterine fetal death IOD	01	2.35
Choriocarcinoma	02	2.35
Total	85	100.0

Diagnosis at Admission

The clinical diagnosis of gestational trophoblastic diseases was made in 43 (50.5%) followed by threatened abortion 17 (20%), missed abortion 15 (17%) and incomplete abortion 2 (2.35%).

Table-10: Height of the Uterus in Relation to Gestational Age in Cases of Hydatidiform Mole

Height of uterus	Complete mole		Partial mole		Total	
	No.	Percent	No.	Percent	No.	Percent
Larger for period of gestation	10	62.50	1	9.00	11	40.70
Corresponding to period of gestation	5	31.20	4	36.30	9	33.30
Smaller for period of gestation	1	6.20	6	54.50	7	25.20
Total	**16**		**11**		**27**	

Height of the Uterus

11 (40.7%) out of 26 cases had uterine size larger for period of gestation, of which 10 (62.5%) were complete moles. 7 cases (25.9%) had smaller uterine size for period of gestation of which 6 (54.5%) were partial moles. 9 (33.3%) cases were having uterine size corresponding to the period of gestation, of which 5 (31.2%) were complete mole and 4 (36.3%) were partial mole.

Table-11: Grading of Hydatidiform Mole – (Shirley G.Dricolls)

Grade	Complete mole		Partial mole		Total	
	No.	Percent	No.	Percent	No.	Percent
Grade-I	34	72.3	21	84	55	76.3
Grade-II	12	25.6	4	16	16	22.2
Grade-III	1	2.60	--	--	1	1.30
Total	**47**		**25**		**72**	

Grading Hydatidiform Mole

In the present study, there were 72 cases of hydatidiform mole of which 47 (65.27%) were complete and 25 (34.72) were partial mole. Majority of these moles belonged to grade-I i.e., 55 (76.3%) followed by grade-II 16 (22.2%) and grade-III 1 (1.3%). Of the 47 cases with complete moles, 34 (72.3%) had grade-I, 12 (25.6%) had grade-II and 1 (2.6%) had grade-III and of the 25 cases with partial mole, 21 (84%) had grade-I and 4 had grade-II.

Hydatidiform Mole

In the present study, out of 47 patients with complete mole, 4 showed toxemia of pregnancy with excessive uterine size and presenting before 20 weeks of gestation. This accounts for 6% of molar pregnancies and 7.2% of gestational trophoblastic diseases.

The biopsy specimens in most of the molar patients consists of suction evacuation and curettage material amounting to 2cc to 5 cc mixed with blood clots, decidual tissue and multiple grape like vesicles of varying sizes. Vesicles had thin, transparent walls and contained clear yellowish fluid. There was a single case of hysterectomy specimen measuring 7.5 x 5.0 x 3.5 cms. On section endometrial cavity was filled with grape like structures.

Histopathological examination shows hydropic villi of varying sizes with prominent trophoblastic hyperplasia and cistern formation in case of complete moles. Partial mole cases showed both normal and hydropic chorionic villi with trophoblastic stromal inclusions and mild to moderate focal, trophoblastic hyperplasia.

Invasive Hydatidiform Mole

There was one case of invasive mole in the present study occurring in a 45 years aged woman with gravida 10 and para 9, which was preceded by hydatidiform mole. Their main presenting features were amenorrhea followed by bleeding per vagina and pain abdomen. Hysterectomy was done and grossly uterus was ruptured with mole protruding through it. Histopathological examination showed hydropic villi and trophoblastic proliferation in the myometrium.

Placental Site Trophoblastic Tumor

In the present study, a solitary case (1.18%) of placental site trophoblastic tumor is found and the age of the patient was 30 years.

The main clinical features included bleeding per vagina. Grossly, grey white to grey brown bits of tissue amounting to 2.5cc were seen. Microscopically the sections revealed proliferation of intermediate trophoblast. Areas of necrosis and hemorrhage were not conspicuous.

Table-12: Antecedent Pregnancy in Choriocarcinoma and the interval between their occurrence

Case No.	Age in Years	Gravida	HM		Abortions		Term pregnancy		Stillborn	
			No.	Interval	No.	Interval	No.	Interval	No.	Interval
1	20	G4	1	2m	--	--	--	--	--	--
2	22	G5	1	6m	--	--	--	--	--	--
3	29	G5	--	--	1	2m	--	--	--	--
4	34	G10	1	8m	--	--	--	--	--	--

Choriocarcinoma

We encountered four cases of choriocarcinoma in the present study of which 3 cases (75%) had past history of hydatidiform mole, one case (25%) had spontaneous abortion, the interval between the antecedent pregnancy and choriocarcinoma was two months to eight months and 2 months respectively.

Out of four cases of choriocarcinoma, three were in the third decade, followed by single case in fourth decade. All cases were multigravida. All patients presented with bleeding per vagina, two developed metastasis to lungs and two patients lost for follow-up.

The hysterectomy specimens in four cases consists of uterus cervix with adnexa with measurement ranging from 7 x 5 x 3 to 11 x 7 x 4.5 cms. Out of these two cases showed diffuse greyish black mass with areas of hemorrhage, the other two cases revealed large areas of hemorrhage and necrosis in the endometrial cavity. Microscopically, the tumors revealed typically abnormal proliferation of cyto and syncytiotrophoblast without any villi formation. Characteristic areas of hemorrhage and necrosis were conspicuous.

Placental Site Trophoblastic Reaction

In the present study of the seven cases of placental site, trophoblastic reaction encountered 5 cases were following abortion, 1 case following molar pregnancy and 1 case following normal delivery. The time interval between the time of patient presentation and antecedent pregnancy being 2 to 3 weeks, 3 weeks and 4 weeks respectively.

Macroscopy

2 were hysterectomy specimens consisting of uterus, cervix with bilateral adnexa measuring 9.5x4.5x3.5 cms and 7.5x3.5x2.5 cms respectively. Uterus cut section shows hemorrhagic nodule with thickened myometrium.

The microscopic examination of the uterus shows, decidua necrotic villi, areas of hemorrhage, intermediate trophoblast and chronic inflammatory cells, infiltrating the myometrium and ovary shows corpus luteum.

All cases presented with features of bleeding per vagina.

In all cases of GTD pre-evacuation urine βhCG was is done using latex agglutination method. During follow up semi-quantitative estimation of urine βhCG is done with serial doubling dilution. hCG in the original urine sample is calculated as follows.

Urinary hCG in IU/ml = D x 0.50

Where D is the dilution factor at the endpoint (highest dilution showing positive result). Most of the patient were not traced during follow-up[112]

Figure-1: Gross appearance: Hydatidiform Mole Cavity filled with grape like structures (7.5 x 5 x 3.5 cms)

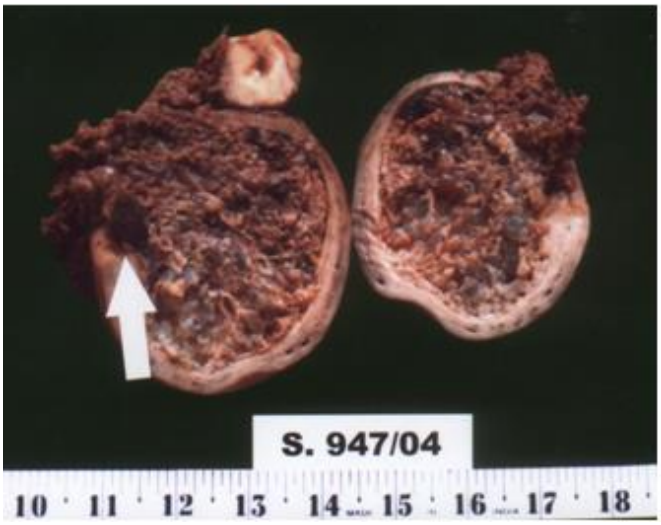

Figure-2: Gross appearance: Invasive Mole – Perforating Uterus (7.5 x 6 x 4 cms)

Figure-3: Gross Appearance: Cut section of invasive mole villi perforating uterus (7.5 x 6 x 4 cms)

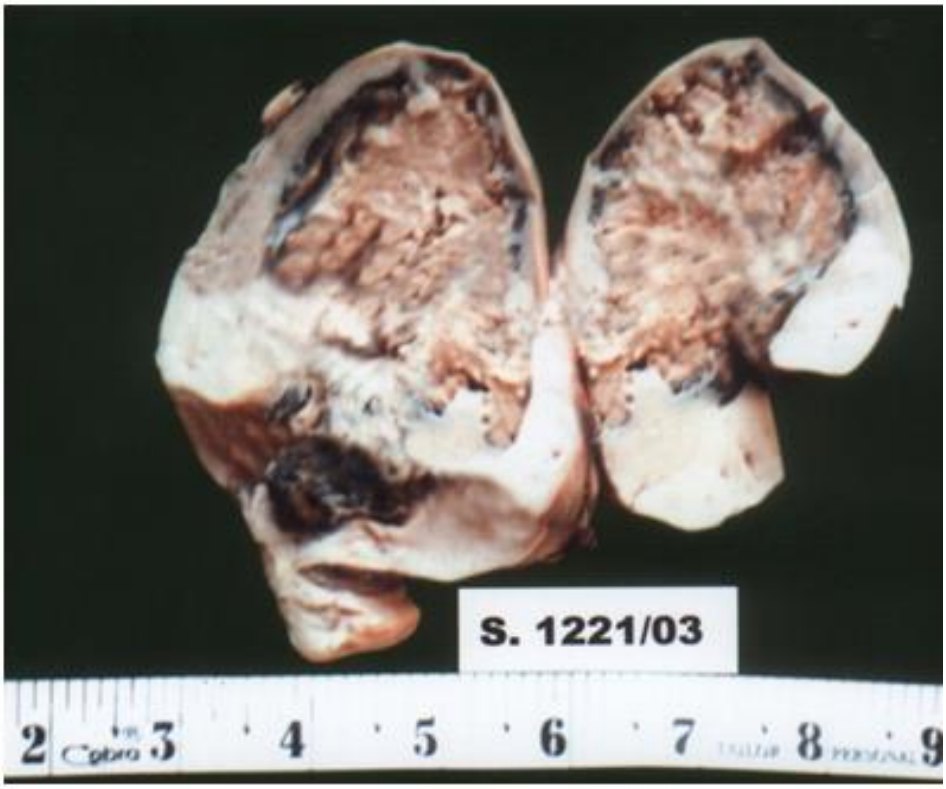

Figure-4: Gross Appearance: Choriocarcinoma – Grey brown mass with areas of necrosis (7.2 x 5 x 3.4 cms)

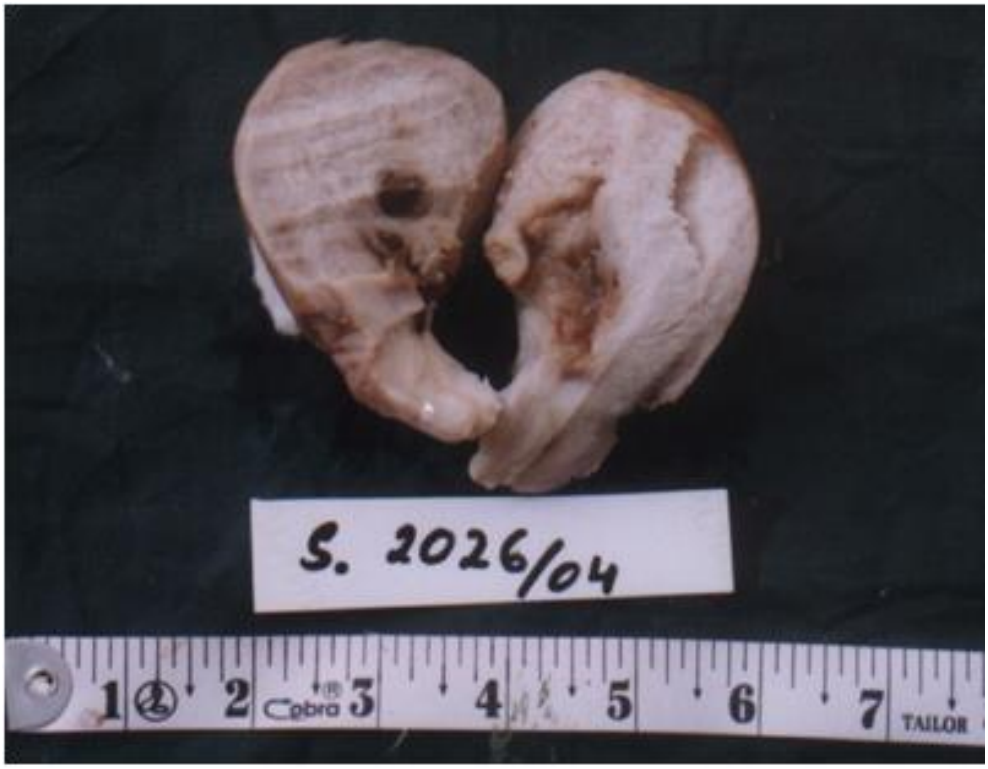

Figure-5: Gross Appearance: Choriocarcinoma – Dark brown mass with areas of hemorrhage and necrosis (7 x 5.5 x 3 cms)
Figure-6: Gross appearance: Placental Site Trophoblastic Reaction – Hemorrhagic nodule with thickened myometrium (7.5 x 3.5 x 2.5 cm)

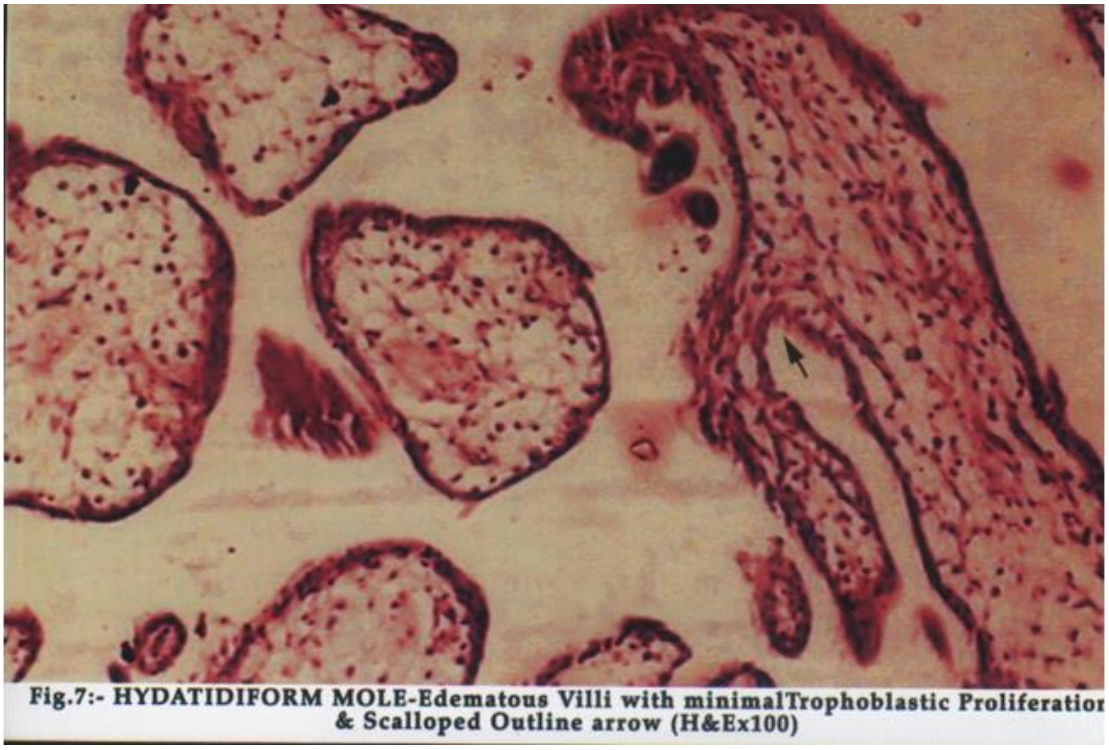

Figure-7: Microscopic feature: Hydatidiform Mole – Edematous villi with minimal trophoblastic proliferation and scalloped outline (H&E x 100)

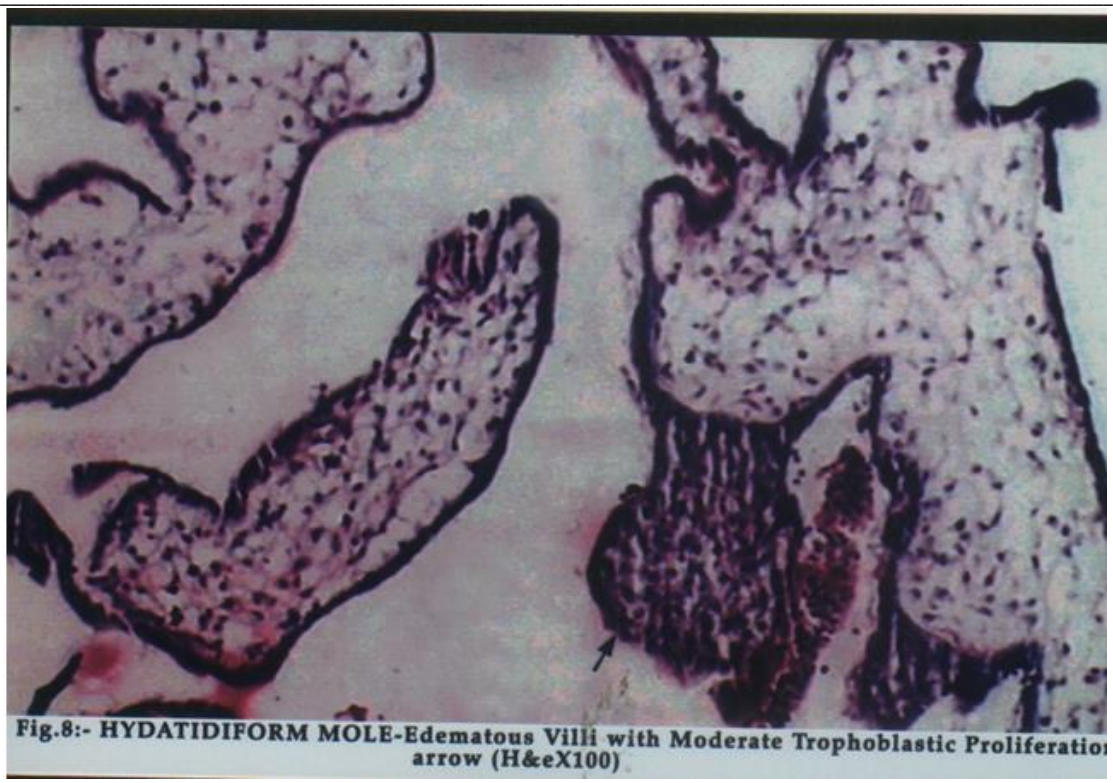

Figure-8: Microscopic feature: Hydatidiform Mole – Edematous villi with moderate trophoblastic proliferation (H&E x 100)

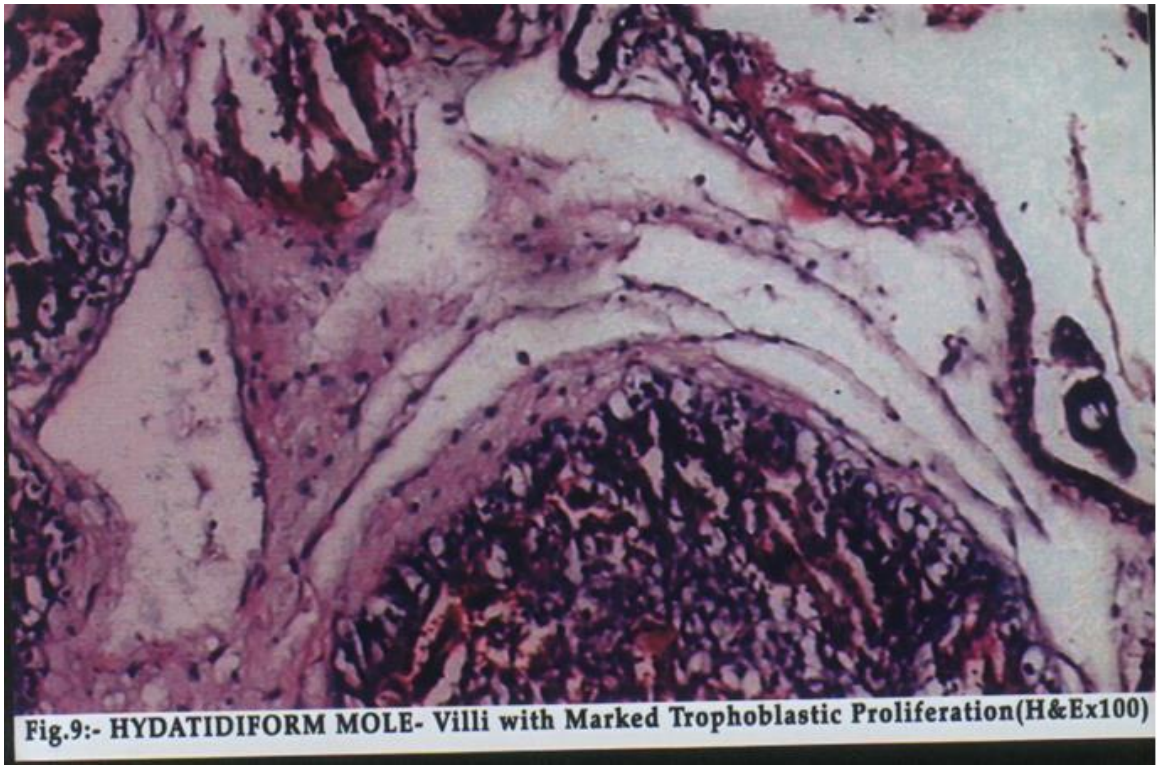

Figure-9: Microscopic feature: Hydatidiform Mole – Villi with marked trophoblastic proliferation (H&E x 100)

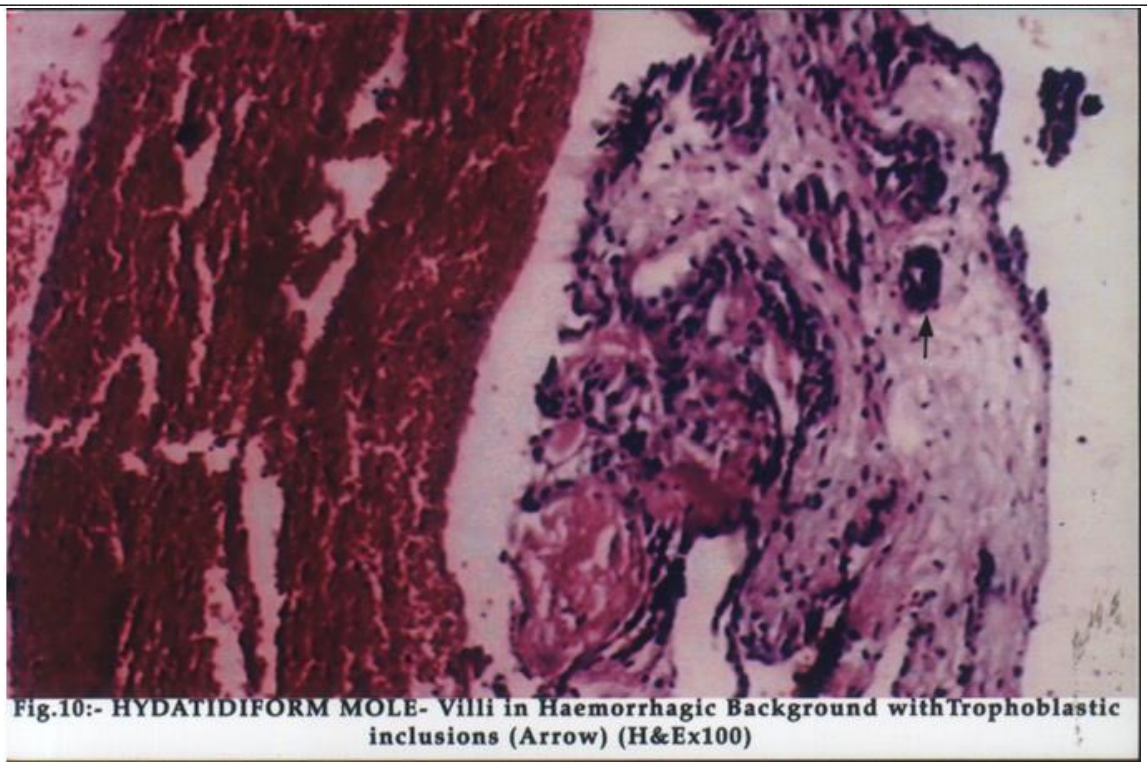

Figure-10: Microscopic feature – Hydatidiform Mole – Villi in hemorrhagic background with trophoblastic inclusion (H&E x 100)

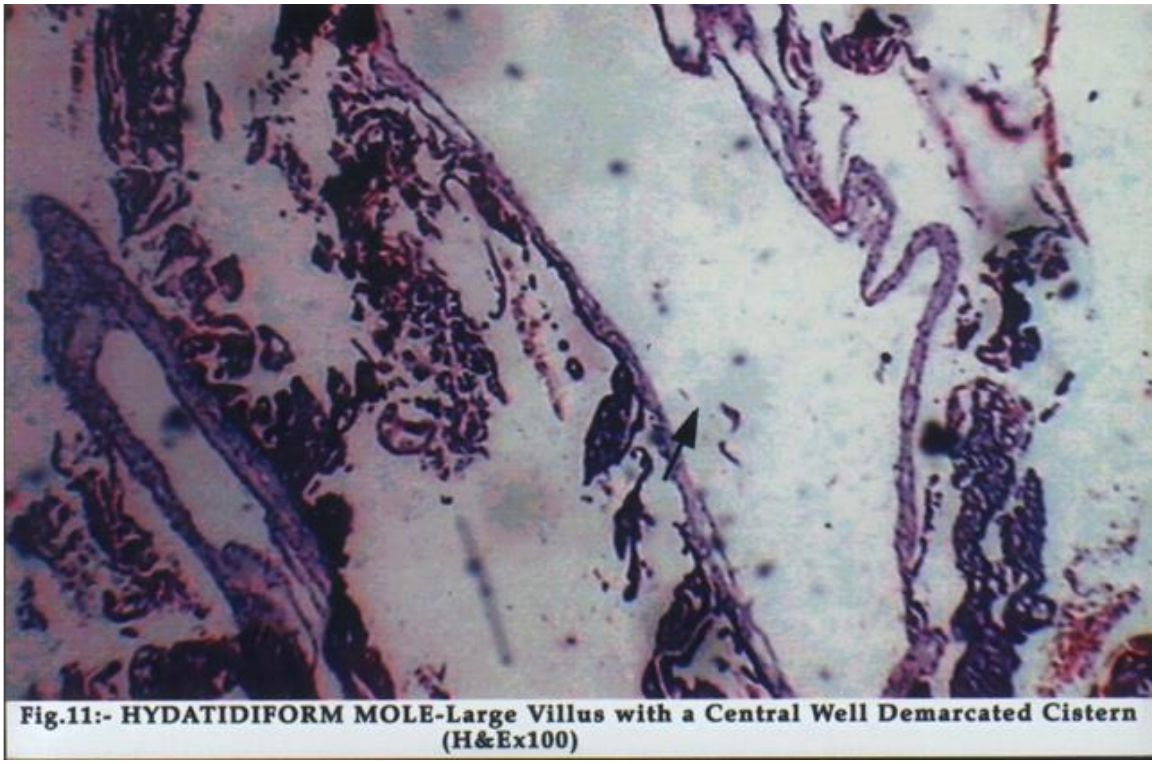

Figure-11: Microscopic feature: Hydatidiform mole – Large villus with a central well demarcated cistern (H&E x 100)

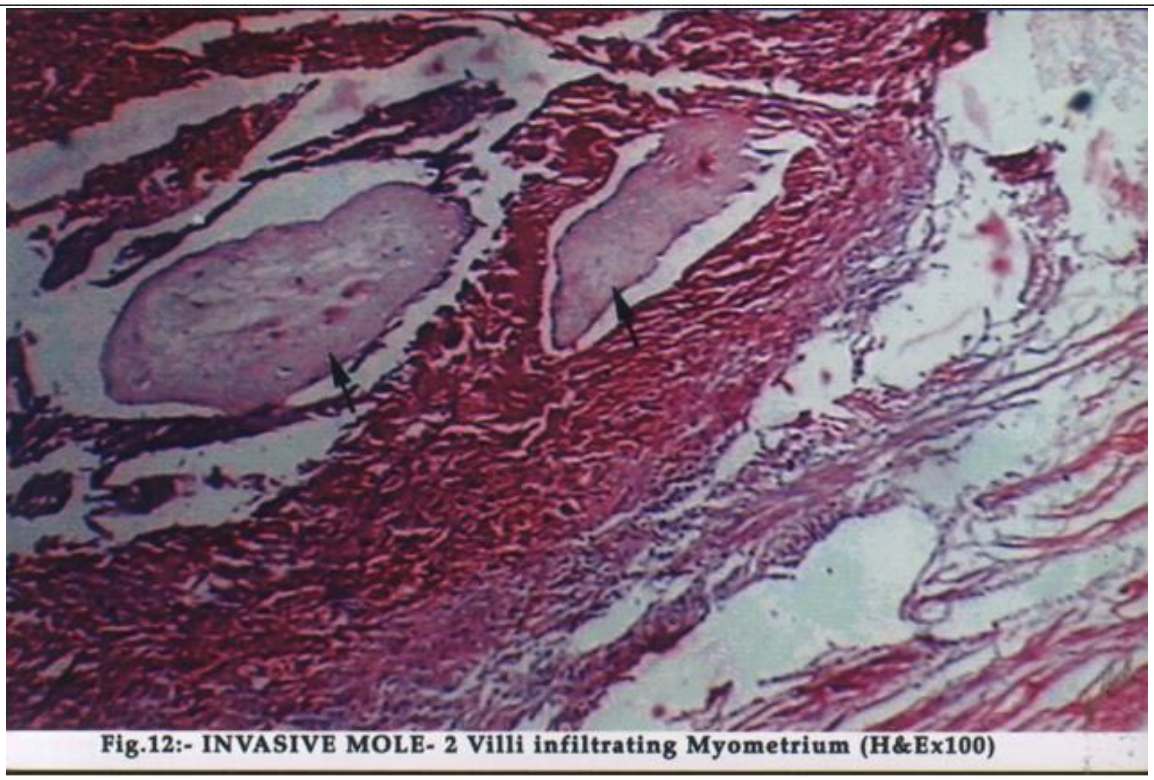

Figure-12: Microscopic Feature: Invasive Mole – 2 Villi infiltrating myometrium (H&E x 100)

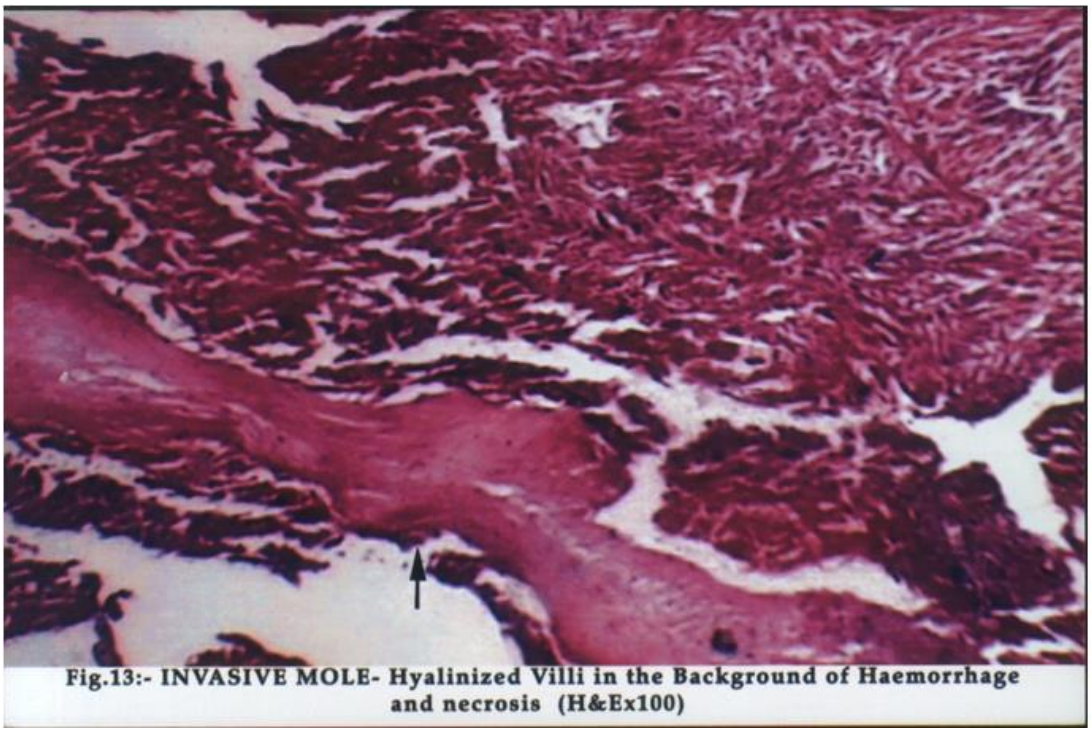

Figure-13: Microscopic feature: Invasive Mole – Hyalinized villi in the background of hemorrhage and necrosis (H&E x 100)

Figure-14: Microscopic Feature: Typical picture of choriocarcinoma with syncytiotrophoblast and cytotrophoblast in the background of hemorrhage and necrosis (H&E x 100)

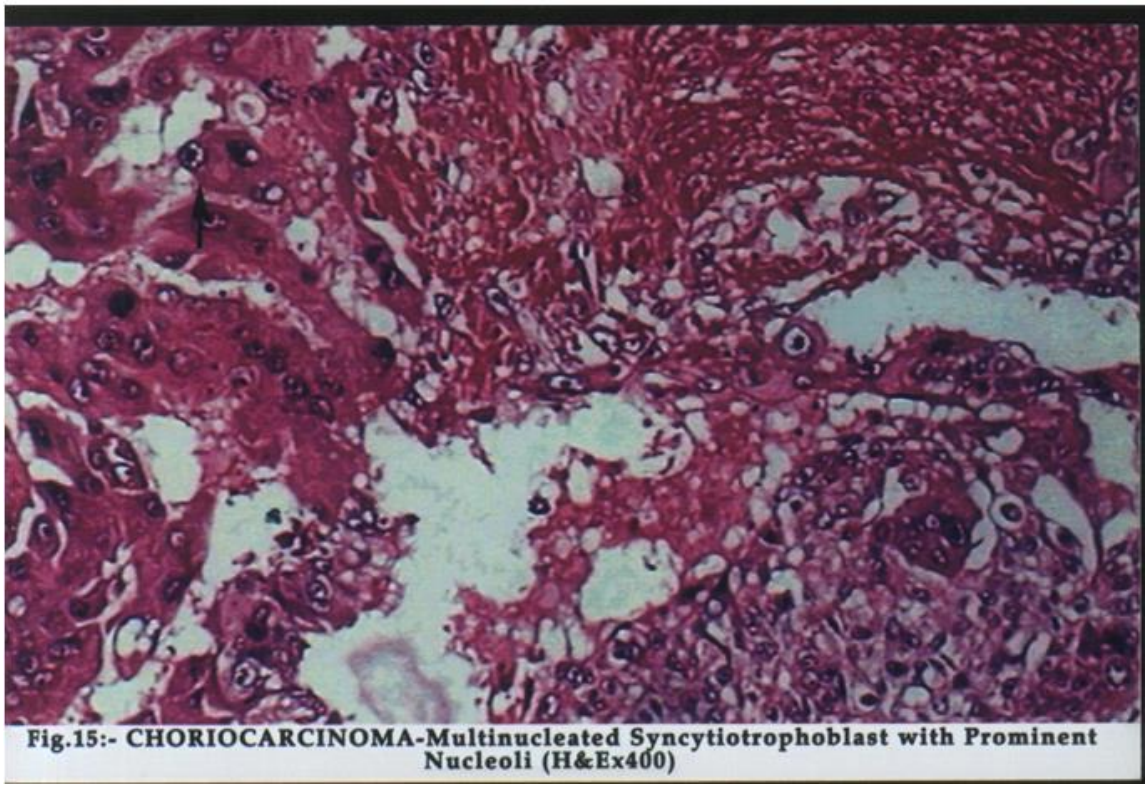

Figure-15: Microscopic feature: Choriocarcinoma – Multinucleated syncytiotrophoblast with prominent nucleoli (H&E x 400)

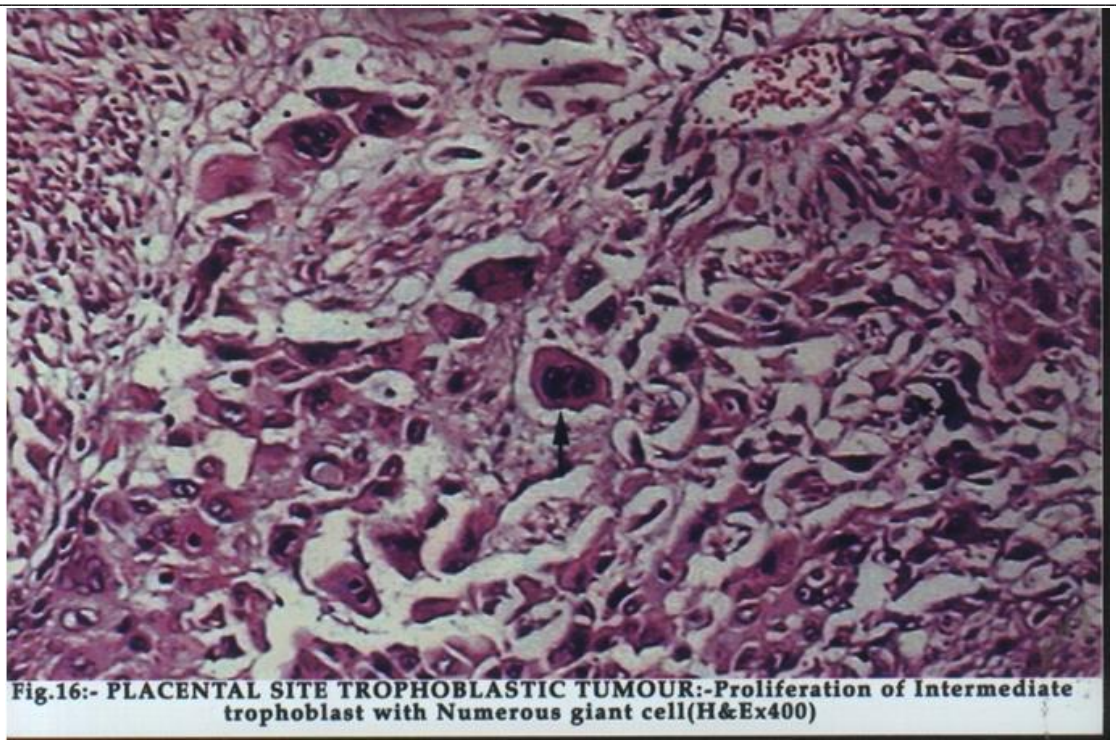

Figure-16: Microscopic feature: Placental site trophoblastic tumor proliferation of intermediate trophoblast with numerous giant cell (H&E x 400)

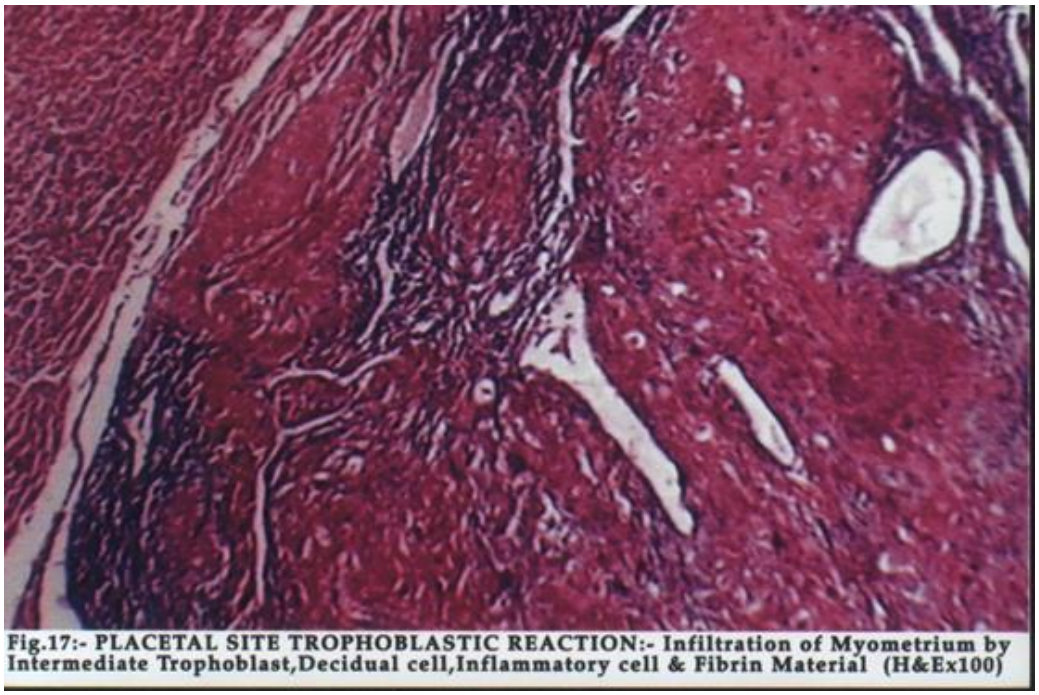

Figure-17: Microscopic feature: Placental Site trophoblastic reaction – Infiltration of myometrium by intermediate trophoblast, decidual inflammatory cell and fibrin material (H&E x 100)

Discussion

Gestational trophoblastic disease constitutes a spectrum of tumors and tumor like conditions characterized by proliferation of pregnancy associated trophoblastic tissue of progressive malignant potential. The lesion include the hydatidiform mole complete and partial, the invasive mole and the frankly malignant choriocarcinoma.

In the present study, 15015 surgical pathology specimens were analyzed over a period of three years. Out of these, 415 cases were

gynecological tumors, gestational trophoblastic diseases were 85 cases constituting 20% of gynecological tumor.
The spectrum of gestational trophoblastic diseases included in this study was hydatidiform mole 72 (84.7%), invasive mole 1 (1.17%), choriocarcinoma 4 (4.7%), placental site trophoblastic tumor 1 (1.18%) and placental site trophoblastic reaction 7 (8.2%).

Incidence
There is no definite reason for varied incidence of gestational trophoblastic diseases in various parts of the world. Various denominators like population based studies, pregnancies, live births and abortion could be attributed to the varying figures.
The incidence in the present study is reported with respect to the total number of deliveries. The incidence of gestational trophoblastic diseases was found to be 1:103 deliveries forming 0.96%.
Kalyani P Kutti [8] from S.A.T. Hospital, Trivandrum (1970) reported the incidence as 1:230 deliveries, similarly Dilip K Chakraborthi and Bhattacharya[8] from Calcutta (1994) reported the incidence as 1:324 deliveries.
The incidence of choriocarcinoma in the present study is near to that of Fakrai [9] (1967) from Iran. The frequency of hydatidiform mole, invasive mole and choriocarcinoma from different teaching hospitals in India. The average occurrence per year ranges from 37.4 (Madurai) to 10.8 (Calcutta). In the present study, it is 15.4% comparable to the studies in Ahmedabad and Vishakapatnam.

Age Incidence
In the present study the incidence ranges from 16-45 years. Peak incidence was seen in 21-30 years (52.94). The youngest was 16 years and oldest was 45 years.

Religion
In the present study, most of the patients were Hindus (72.8%) followed by Muslims 25.9% and Christians 1.2%. 3 cases of choriocarcinoma patients belonged to Hindu community and 1 Muslim patient had choriocarcinoma. Taking this into account, there is no significant predilection for hydatidiform mole to any particular community.
Rajan R[10] (1988) from Kottayam reported the incidence in Christians as 55.56%, Hindus 2.78% and Muslims 16.67%.

Gravida
In the present study, gestational trophoblastic diseases were more common in the second and 4th pregnancies as compared to Kalyani Kutty P[8] (1970) from S.A.T. Hospital, Trivanduram reported more number of cases in the first, second and third pregnancies.
The present study correlates with Anita Sen Gupta's study, with predominance of 'A' group whereas Paranjyothy D [11] reported a predominance of 'O' group in gestational trophoblastic tumor. It is concluded that there is no correlation between the blood groups and malignant sequelae[12].

Symptomatology
The most frequent symptom in the present study was bleeding per vagina (100%), followed by amenorrhea 97% and pain abdomen 69.4% as compared to Chhabra and Sinha[13] study in which bleeding per vagina (97.78%(followed by pain abdomen (91.11%) and amenorrhea (84.44%).

Diagnosis at Admission
The clinical diagnosis of gestational trophoblastic diseases was made in 43 (50.5%) followed by threatened abortion 17 (20%) and missed abortion 15 (17%), which is comparable to Chhabra and Sinha[13] (1988) study, where clinically the diagnosis of gestational trophoblastic disease was made in 28 (62.22%) followed by threatened abortion 12 (26.67%) and missed abortion 4 (8.89%).
The present study revealed 11 cases of partial hydatidiform moles among which 6 (54.5%) had uterine height smaller than the period of amenorrhea, 4 (36.3%) had corresponding period of amenorrhea and 1 (9%) had uterus larger for period of gestation, which is comparable to the Szulman AE and Surthi U Szulman AE[14] (1982) from Magee Women's Hospital studied 201 molar pregnancies, of which 86 were partial moles.

Recurrent Hydatidiform Mole
In the present study, 2 cases of recurrent hydatidiform mole were encountered accounting for 2.3%.
Reports from India are few. Most reported series had 2 to 8 recurrences. Bhaskar Rao[5] (1970) reported an incidence of 1.019% to 1.8% for recurrent hydatidiform mole.
Kanaka Durgambal and Rajaram[1][15](1970) from Hydrabad reported 2 cases, one case with five consecutive molar pregnancies and another with three molar pregnancies consecutively.

Hydatidiform Mole Co-existing with the Fetus
No such case was encountered in the present study. Hydatidiform mole co-existing with fetus occurs very rarely. Bhaskar Rao[5] (1970) reported 7 cases of hydatidiform mole co-existing with a fetus.

Theca Lutein Cysts
Theca lutein cysts were seen in 5 (5.8%) of the gestational trophoblastic disease. Bhaskar Rao[5] (1970) reported the incidence for theca lutein cyst as 7.8%. Theca lutein cysts have a high risk of malignancy and requires subsequent observation, however, no such association was seen in the present study.

Grading of Hydatidiform Mole
The present study revealed 72 molar pregnancies. Majority of these moles belonged to grade-I. 55 (76.3%) followed by grade-II 16 (22.2%) and grade-III, 1 (1.3%) grading was done as per Driscoll's grading[4].
Grade-I moles histologically were benign and none of these patients came back with persistent trophoblastic disease or choriocarcinoma within the period of follow-up.
Regarding grade-II hydatidiform moles, out of 16 cases, 6 patients were lost for follow-up, of 10 cases followed up 1 patient showed persistent trophoblastic disease and 1 patient developed choriocarcinoma. Since there was a single case of grade-III mole no definitive conclusion could be drawn.
In the present study there was no case of mortality either due to molar pregnancy or due to non-neoplastic complications of molar pregnancy. Hector Marquez et al (1963) from Mexico city reported a patient who died during curettage the cause of death was cardiac arrest. This was 0.90% mortality rate of the series.

Invasive Mole
One case of invasive mole was encountered in the present study. The patient was 45 years old, multiparous where invasive mole is rare in this age group. This case had no secondaries and hysterectomy was curative.
Bhaskar Rao[5] (1970) in a review article reported 42 cases of invasive mole out of a total of 1094 patients of gestational trophoblastic tumors. 10 of these 42 cases (33.8%) had secondaries in the lungs and vagina.

Choriocarcinoma
Four cases of choriocarcinoma was encountered in the present study constituting 4.7%. The youngest patient was 20 years and oldest was 34 years, the interval between previous pregnancy and choriocarcinoma was 2 months to 8 months. Bhaskar Rao[5] (1970) reported 121 patients of choriocarcinoma in a total of 1094 gestational trophoblastic tumors constituting 11%. In their series the youngest patient was 16 years and oldest 50 years. The interval between the previous pregnancy and choriocarcinoma was 6 weeks to 9 years. 80 patients had secondaries. The commonest site of metastases observed was lungs and vagina. The other sites of metastasis observed were ovary, liver, brain, vulva, lymph nodes, colon and abdominal wall.

In the present study, 3 out of 4 cases, choriocrcinoma is preceded by hydatidiform mole in 3 (75%) and in 1 (25%) preceded by abortion, this study correlates well with other studies.

Kanakadurgambal and Rajaram P[15] (1970) studied 134 patients of choriocarcinoma of the 13 cases, 6 (46%) were preceded by hydatidiform mole, 4 (30%) by term delivery and 2 (16%) by abortion.

Paranjyothy[11] (1968) reported an incidence of 6% of choriocarcinoma cases associated with pulmonary tuberculosis. Of the 4 patients of choriocarcinoma, all 4 were treated by hysterectomy, one by chemotherapy and hysterectomy and 3 refused chemotherapy treatment and did not come for follow-up. One patient died due to metastasis.

Placental Site Trophoblastic Tumor

One case was encountered in the present study. It is a very rare variant of trophoblastic disease and thought to be benign. But further studies have shown that these tumors can behave aggressively. However, malignant form is very rare.

In the present study, the patient underwent dilatation and curettage, which shows complete remission.

Placental Site Trophoblastic Reaction

In the present study, 7 cases of placental site trophoblastic reaction was observed, 5 following an abortion (71.4%), 1 (14.2%) normal delivery and 1 (14.2%) following molar pregnancy. The interval ranging from 2-3 weeks.

Ping-Yenwei and Peichuan[16] (1963) reported 3 patients of placental site trophoblastic reaction (1:4,301 deliveries). All the 3 patients had vaginal bleeding following molar pregnancy. The interval ranging from 20 days to 2 months, all the 3 were actually suspected of having choriocarcinoma and hysterectomy were performed.

Conclusion

The incidence of gestational trophoblastic diseases was more in the southeast Asian countries as evidenced from the review of literature, but unfortunately these are the countries where an organized study of these tumors in the form of National Registries as in United States of America, United Kingdom and Japan is lacking. Hence, the diagnosis and follow-up of these patients is essential for the early detection of malignant trophoblastic disease and reduce the mortality rates.

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