Original Article

Histopathological Pattern of Gestational Trophoblastic Disease in Pakistani Patients

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ABSTRACT

Objective: To evaluate histopathological pattern of gestational trophoblastic diseases in the department of pathology, J.M.D.C from 2014 -2019.

Study Design: retrospective study

Place and Duration of Study: This study was conducted at the Department of Pathology, Jinnah Medical and Dental College, Karachi. during the period from Jan 2014 to Dec 2019.

Materials and Methods: This study is based on the analysis of placental biopsies. All clinically diagnosed cases suspected as gestational trophoblastic disease on the basis of clinical presentation and serum/urine HCG levels.

Results: A total of 830 placental biopsies received were included in this study. Out of the above mentioned 830 biopsies,151 were hydropic abortion and gestational trophoblastic disease and 679 were of simple abortion. Amongst 151 cases, 67 were complete hydatidiform mole, 52 were partial hydatidiform mole, 2 were choriocarcinomas and 30 were hydropic abortion.

Conclusion: From this study, it is evident that benign lesions are more common with 42.9% of the cases of partial hydatidiform mole and 55.3% of the cases of complete hydatidiform mole 86.6%, while malignant were found to be 1.65%. Trophoblastic tumour screening and treatment units should be available in all hospitals and patients with recurrent molar pregnancies should be registered. Post molar follow-up should be done including determination of B HCG levels every 1-2 wks after evacuation until HCG level is normal.

Key Words: Hydropic abortion, gestational trophoblastic disease.

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INTRODUCTION

Gestational trophoblastic diseases (GTD) is a spectrum of cellular proliferations arising from placental villous trophoblasts[1]. It arises from placental trophoblastic tissue after normal or abnormal fertilization. The W.H.O classification of GTD includes hydatidiform mole, invasive mole, choriocarcinomas, placental site trophoblastic tumour and miscellaneous and unclassified trophoblastic lesions[2]. With increasing understanding of the biological evolution of GTD the terms "benign" and "malignant" for hydatidiform mole and persistent GTD is usually avoided[3]. Gestational trophoblastic neoplasia (GTN) is a term applied to invasive mole, choriocarcinoma and placental site trophoblastic tumours. These conditions can progress, invade, metastasize and lead to death, if left untreated. GTD was historically associated with significant morbidity and mortality. The countess of Henneberg who delivered a hydatidiform mole on Easter 1276 is the first identifiable individual with this disease entity[4]. The prognosis of GTN was very poor, 50 years back, before introduction of chemotherapy into its management. Nowadays, gestational trophoblastic neoplasms are most curable of all solid tumours, with cure rates > 90% even in the presence of widespread metastatic disease[5,6]. Although there is no accurate report for prevalence and incidence of GTD in Pakistan but according to one study in Nawabshah, the frequency of GTD is 28 per 1000 live births, which is quite significant[7]. The incidence of molar pregnancy demonstrates marked geographical and ethnic differences for example in Japan (2/1000), in Malaysia (2.8/1000), in North America (2.5/1000) and in Turkey (12.1/1000) deliveries[7].

Hydatidiform mole is a disorder of genomic imprinting. It is characterized by abnormal development of both fetus and trophoblasts [8]. The exact cause of HM is not known. Potential causes include defects in the egg, problems within the uterus or a diet low in protein, animal fat and vitamin A. Several risk factors contribute to the development of CHM but the two

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most known risk factors are extremes of maternal age and prior molar pregnancy. Advanced or very young maternal ages are usually correlated with high rates of CHM. Other risk factors include previous history of spontaneous abortions, deficiency of beta carotene and animal fat. Ovulation induction for fertility may also be associated with an increase in pregnancies consisting of a normal fetus or fetuses and molar gestation [9].

Patients are more likely to have diets deficient in vitamin A precursor. The risk is reduced by increased consumption of carotene[10].

Hydatidiform moles are subclassified on the basis of histopathology, clinical features and ploidy as partial and complete. Partial moles develop from the fertilization of a normal egg by two spermatozoa or occasionally a diploid spermatozoan, resulting in a triploid gestation with one maternal and two paternal sets of chromosomes [11].

Mostly complete moles are entirely androgenetic lacking nuclear DNA of maternal origin. Androgenetic complete hydatidiform mole may originate by dispermy (XX or XY) or more frequently monospermy (always XX) resulting from fertilization of a functionally anucleate egg by a single sperm whose pronucleus replicate before the first cleavage division [12]. Rarely, CHM are biparental rather than androgentic in origin. BiCHM, mostly occur in patients who have a history of multiple CHM arising in different conceptions and mostly in women of families in which two or more individuals have molar pregnancies [13,14]. BiCHM and AnCHM are histologically indistinguishable and requires DNA analysis to discriminate between them.

MATERIALS AND METHODS

This study was conducted at the department of pathology Jinnah Medical and Dental College, Karachi. during the period from Jan 2014 to Dec 2019.

Inclusion Criteria: All clinically diagnosed cases suspected as gestational trophoblastic disease on the basis of clinical presentation and serum/urine HCG levels.

Exclusion criteria:

1. Foreign nationals.
2. Pakistanis living in foreign countries for more than 10 years.
3. Inadequate material

RESULTS

A total of 830 placental biopsies cases were included in this study. All of the specimens were obtained by dilation and evacuation method.

The results and observations thus obtained from the study are hereby presented and explained with the help of tables and figures.

Out of the above mentioned 830 biopsies, 151 were hydropic abortion and gestational trophoblastic disease and 679 were of simple abortion. Amongst 151 cases, 67 were complete hydatidiform mole, 52 were partial hydatidiform mole, 2 were choriocarcinomas and 30 were hydropic abortion as shown in figure 1.

The mean age of 830 patients was 32.0±9.3 years ranging from 19-42 years. The age range in non-molar pregnancy group and molar pregnancy group was between 10 – 50 years as shown in Table 1. The non-molar pregnancy group was common (63.3%) between 21-30 years and the molar pregnancy group was common (46.2%) between 41-50 years. No case of invasive mole and placental site trophoblastic tumour found in our study.

Table 2 shows the correlation of age with PHM and CHM. Majority of the patients (67.2%) of partial mole were found in the second and third decade and in case of complete mole most of the patients (82.6%) were found in third and fourth decade.

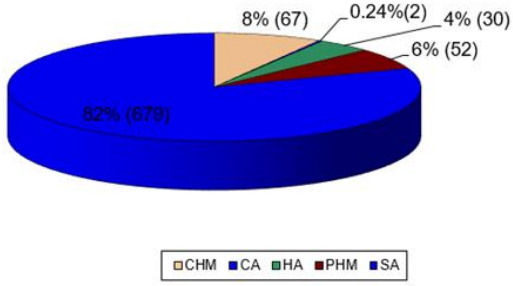

Figure No.1: total number of specimens and distribution according to type of placental lesions (n=830)

Table No.1: Distribution of Abortions and Gestational Trophoblastic Diseases According to Various Age Groups (N=830)

Age	Simple/Hydropic Abortions	Hydatidiform mole (CHM & PHM)	Invasive mole	Choriocarcinomas	Placental Site Trophoblastic Tumours
10 – 20	86 (12.1%)	15 (12.6%)	-		-
21 – 30	451 (63.6%)	33 (27.73%)	-	2 (100%)	-
31 – 40	154 (21.7%)	16 (13.4%)	-		-
41 – 50	18 (2.5%)	55 (46.2%)	-		-
Total	709 (100%)	119 (100%)	-	2 (100%)	-
Mean age: 32.0±9.3 years Ranging from 19-48 years					

Table No.2: Distribution of Complete and Partial Hydatidiform Mole in Various Age Groups (N = 119)

Age groups (Years)	Partial Mole	Complete Mole
10 – 20	7 (13.4%)	8 (11.9%)
21 – 30	28 (53.8%)	4 (5.9%)
31 – 40	7 (13.4%)	10 (14.9%)
41 – 50	10 (19.2%)	45 (67.7%)
Total	52 (100%)	67 (100%)

Chi square=39.61 P < 0.001

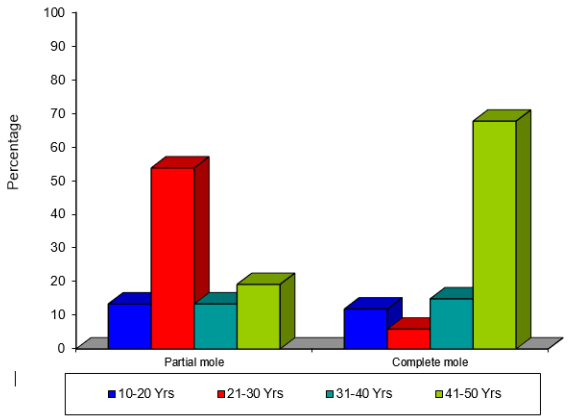

Figure No. 2: distribution of complete and partial hydatidiform mole in various age groups (n = 119)

DISCUSSION

In the present study, 830 placental biopsies were analyzed over a period of five years. Out of the 830 placental biopsies, 121 (14.5%) showed gestational trophoblastic diseases. Out of 121, complete hydatidiform mole were 55.3%, partial hydatidiform mole were 42.9%, choriocarcinomas were 1.65%. Out of the remaining 709 cases, 30 were hydropic abortions and the rest were simple abortions.

In the present study, simple and hydropic abortions make up 85% of the total number of cases. Most of our patients of simple and hydropic abortions were found between the ages 21 – 30 years. This is in close proximity with the study conducted in Iran which proved that the mean age of patients in nonmolar pregnancy group was 26.20±5.08 years [15].

In the present study, 42.9% of the cases were partial hydatidiform mole. Most of the cases of partial hydatidiform mole were found between the ages 21 – 30 years. This is in concordance with the study conducted by Sadiq and Panjwani [16]. They also found the commonest age group to be between 21 – 30 years. Osterheld and associates[17] also proved that in partial hydatidiform mole the maternal age is usually between 21 - 30 years.

Present study shows that, 55.3% of the cases were complete hydatidiform mole which is closed to 60.7% reported by Mayun and associates [18]. In the present study, the age ranges from 16 – 45 years. Peak incidence was seen between 41 – 50 years. The youngest was 16 years and oldest was 45 years. This is in accordance with the study conducted by Sadiq [16], who had also found the maximum number of cases in the fifth decade. Khanum and Shamsheer [19] reported the maximum number of cases to be between 21 – 39 years. However, they did not categorize hydatidiform mole into complete and partial. Most studies reported a significant increase, in women above 35 years of age and a further 10-26 fold increase beyond age of 40 [20]. Incidence is also noted high at the beginning of reproductive life. The available evidence suggests that hydatidiform mole arises as a consequence of defective ova [21]. It is premature in young and post mature in old ages. It is also stated that advanced maternal age may result in a weaker immune response against complete hydatidiform mole, therefore increasing the risk of gestational trophoblastic neoplasia due to ineffective elimination of trophoblastic cells after evacuation [22].

It is observed that majority of our patients in this study had low socioeconomic and poor educational status. This fact has been proved by a Korean study by decreasing the rate of incidence from 4.4 (1960s) to 1.6 (1990s) with improvement in medical care, socioeconomic and educational standards [23,24].

In our series, choriocarcinoma were found to be 1.65%. They were found in the third decade. This is in accordance with the study conducted by Sadiq [16] who found the percentage of chriocarcinomas to be 1.95%. They also found most of the cases in the third decade. Beta HCG correlation could not be done uniformly as most of the cases did not revealed detailed clinical history of the patients including the HCG levels.

CONCLUSION

From this study, it is evident that benign lesions are more common with 42.9% of the cases of partial hydatidiform mole and 55.3% of the cases of complete hydatidiform mole 86.6%, while malignant were found to be 1.65%. Trophoblastic tumour screening and treatment units should be available in all hospitals and patients with recurrent molar pregnancies should be registered. Post molar followup should be done including determination of B HCG levels every 1-2 wks after evacuation until HCG level is normal.

Author's Contribution:

Concept & Design of Study:	Saleha Masood
Drafting:	Bhawani Shanker
Data Analysis:	Rafia Siddique
Revisiting Critically:	Saleha Masood, Bhawani Shanker
Final Approval of version:	Saleha Masood

Conflict of Interest: The study has no conflict of interest to declare by any author.

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