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Research Article

Clinical Profile and Outcomes of Gestational Trophoblastic Neoplasia in North India: A Retrospective Study

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Abstract

Background: *Gestational Trophoblastic Disease (GTD) is a spectrum of tumours arising from the abnormal proliferation of placental trophoblast cells. All malignant subtypes of GTD are called as gestational trophoblastic neoplasia (GTN). The primary objective was to study demographic patterns, and characterize disease presentation, treatment given and outcomes in patient with a primary diagnosis of GTN, who were treated at Maulana Azad Medical College & Lok Nayak Hospital, New Delhi, India.*

Method: *Patients diagnosed with GTN registered at our centre from 01-02-2014 till 05-05-2024, were enrolled for this study. Patient's demographic and clinical data were collected from clinical records. The data was represented as absolute number, percentage, and median (range: minimum to maximum), whichever applicable.*

Results: *Analysis revealed that GTN predominantly affected women in their age group of 20s and 30s. The most common presenting symptom was bleeding (92%), with a median symptom duration of two months. Most cases were choriocarcinoma (62%), and one third of patients presented with distant metastases, primarily with lung metastasis. WHO Prognostic Scoring System classified 56% of patients as high-risk. Low-risk patients were treated with single-agent chemotherapy, while high-risk patients received a multi-agent regimen. The median progression-free and overall survival was high with the use of risk stratified treatment approach.*

Conclusions: *Patients who underwent risk stratification-based therapy shown good response to the treatment. However, the limitation of the small sample size and short follow-up in this study may not be a true data representation of the entire population.*

Keywords: *Clinical and treatment profile; demography; Gestational Trophoblastic Neoplasia; India.*

Introduction

Gestational Trophoblastic Disease (GTD) constitutes a spectrum of rare disorders ranging from benign to malignant subtypes, characterized by the abnormal proliferation of trophoblastic tissue arising after a pregnancy. Benign but potentially premalignant forms of GTD constitutes, Hydatidiform Mole (Molar Pregnancy) i.e. Complete Hydatidiform Mole and Partial Hydatidiform Mole. Malignant form of GTD is also known as Gestational Trophoblastic neoplasm (GTN), which constitutes various subtypes like Invasive Mole, Choriocarcinoma, Placental-Site Trophoblastic Tumor (PSTT) and Epithelioid Trophoblastic Tumor (ETT) . The primary objective was to study demographic patterns, and characterize disease presentation, treatment given and outcomes in patient with a primary diagnosis of GTN, who were treated at Department of radiotherapy and oncology, Maulana Azad medical college and Lok Nayak Hospital, New Delhi, India.

Materials and Methodology

Patients enrolled for this study were those who were diagnosed with GTN and were registered at the Department of Radiotherapy and Oncology at Maulana Azad Medical College and Lok Nayak Hospital from 01-02-2014 till 05-05-2024. Follow-up data of these patients was collected till 31-03-2025.

Patients who were included in this study were those (1) who had clinical diagnosis of GTN; (2) chemotherapy naïve at the time of presentation; (3) Eastern cooperative oncology group (ECOG) performance status of 0, 1, or 2.

Patients with refractory or relapsed disease status at the time of presentation and who had a history of chemotherapy/radiotherapy were excluded from this study.

Structured data included information about patient's demographic data, clinical presentation, appropriate therapeutic intervention, and post therapeutic response (response evaluation criteria in solid tumors, version 1.1). The data was represented as absolute number, percentage, and median (range: minimum to maximum), whichever applicable. Microsoft excel was used to calculate median value using the formula "=MEDIAN (Range of cells)". SPSS Statistics software, Vs 17.0 was used to generate Kaplan–Meier curve.

Results and Obervations

During the period, a total of 39 patients of GTN were registered at our institution. Structured data was collected including demographic patterns, disease presentation, treatment given and treatment outcomes. After analysis, the data was compiled in number, percentage of patients, and the median value (with range), whichever applicable.

Demographic profile

Median age of patients at the time of diagnosis, in our study cohort of 39 patients was 28 years with range from 19 years to 45 years. Most patients belonged to 20-29 and 30-39 age brackets, with only two patients of 19 years of age, representing the youngest demographic. Only 4/39 (10.2%) patients were in 40-45 age group, indicating a lower incidence in older individuals. 10/ 39 (25.6%) patients had history of prior use of Contraception either in the form of OCPs or IUDs. Majority, 23/39 (59%) of patients were vegetarian in their dietary habits while remaining 41% were non-vegetarian in diet. Only 3 patients were smokers among the study cohort (Figure 1). There was no cancer-related death or death from a similar illness in the family of any of these individuals. Obstetrics history revealed that median Gravida (number of pregnancies) was 3 (Range: 1-8) and Para (number of pregnancies reaching viability, typically 24 weeks) was 2 (Range: 1-6).

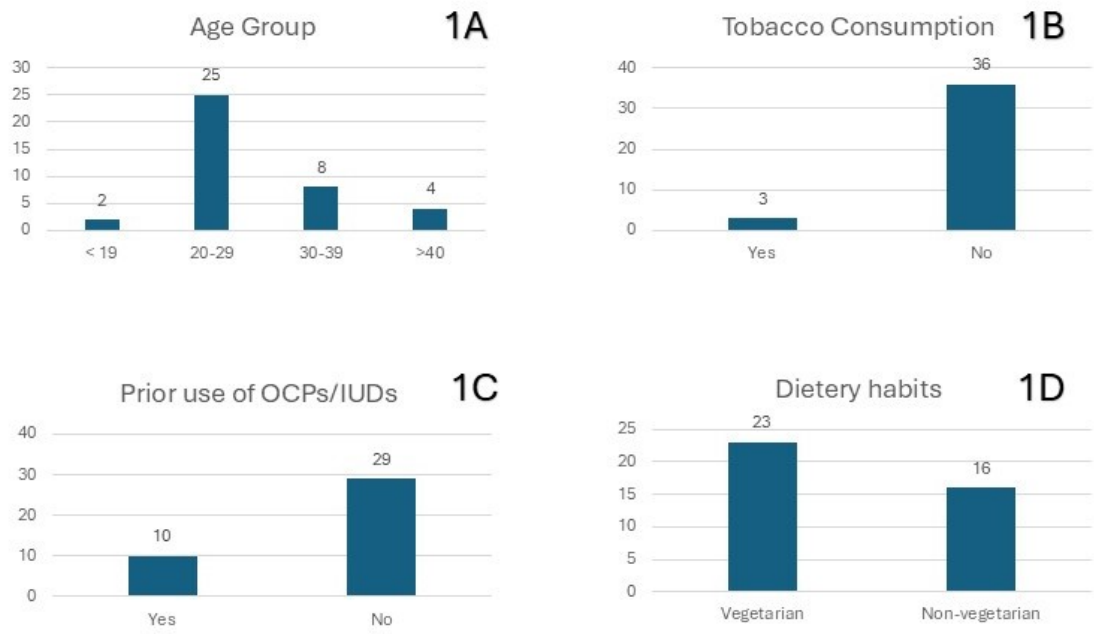

Figure 1: (A) Number of patients in each age group, (B) Number of patients with history of tobacco consumption, (C) Number of patients with history of contraception use, (D) Number of patients within each dietary group.

Clinical profile

Bleeding was found to be the most common clinical feature among the patients of GTN. Pain and Amenorrhea were the second and third most common clinical feature, respectively. The incidence of all the clinical features has been shown in Table 1. Median duration of presenting clinical symptoms was 2 months (range 1- 8 months). 7 of 39 (17.9%) patients had abortion in antecedent pregnancy, while 13 (33.3%) had term delivery

and 19 (48.7%) patients had molar pregnancy. Among the Molar pregnancies, 11 (57.9%) patients had Partial Hydatidiform mole while 8 (42.1%) patients had Complete Hydatidiform mole. Of all the patients of GTN, 15 (38.5%) patients had invasive mole, while 24 (61.5%) had choriocarcinoma (Figure 2).

Largest Tumor size varied from 1 cm to 7 cm with a median value of 3 cm, in our study cohort. 13 out of 39 patients had Distant metastasis at the time of presentation. Most common site of distant metastasis was lung which was seen in all 13 patients (100%) followed by brain metastasis (2 out of 13 patients, 15.4%). Among the patient who had metastasis, median number (count) of metastases was 5 (Range: 1-10).

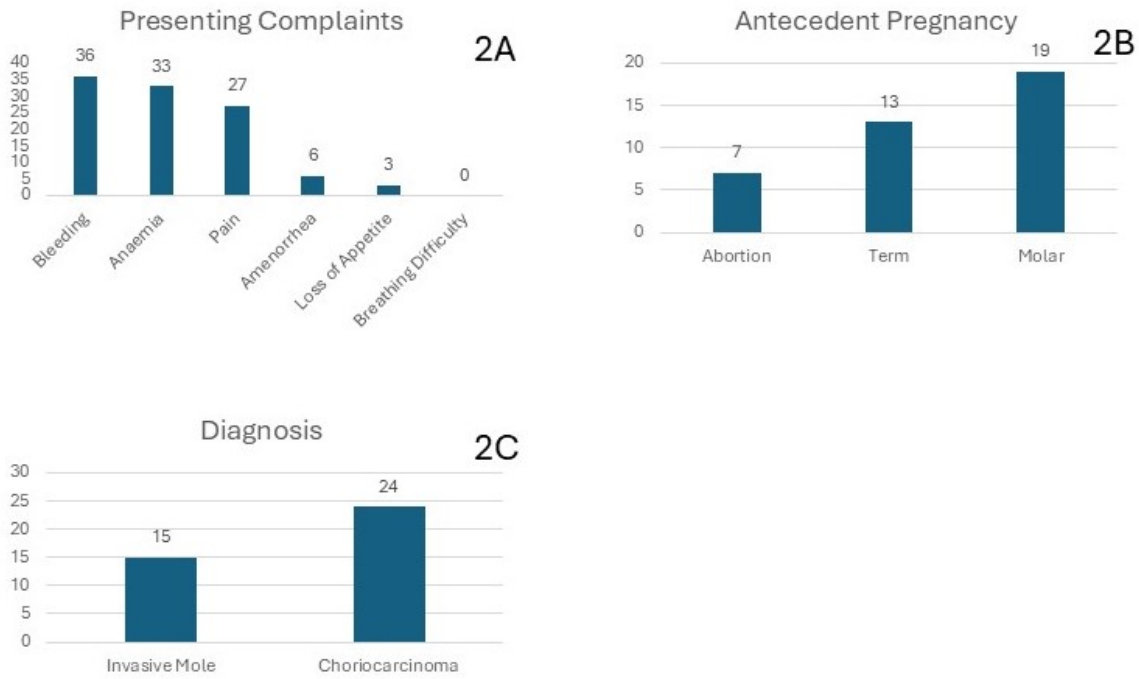

Figure 2: (A) Number of patients presenting with each presenting complaint, (B) Number of patients with type of antecedent pregnancy, (C) Number of patients in each subgroup of gestational trophoblastic neoplasia.

Treatment profile

Risk stratification of disease was done using WHO Prognostic Scoring System. In our study cohort 17of 39 (43.6%) patients had low risk disease profile, while 22 of 39 patients (56.4%) had high risk disease. All patients who were scored low risk of disk were treated with single agent chemotherapy with Methotrexate (94.1 % patients) or Actinomycin D (5.9% patients). All patients who scored high risk of disease were treatment with multiagent chemotherapy with EMA-CO regimen, consisting of Etoposide, methotrexate, actinomycin D, Cyclophosphamide and Vincristine (Figure 3).

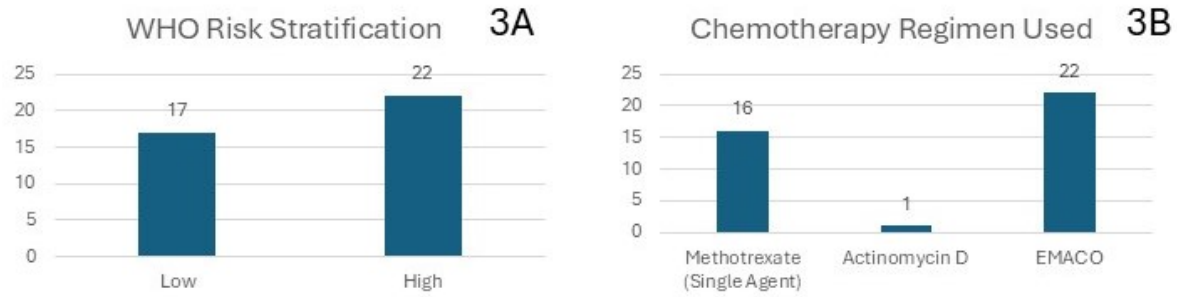

Figure 3: (A) Number of patients in each WHO risk group, (B) Number of patients who received different chemotherapy Regimen.

Survival analysis

Median progression free survival (PFS) was 68.4 months (Figure: 4A) with no statistical difference between **the high and low risk cohorts (Figure 4B, p value: 0.629).**

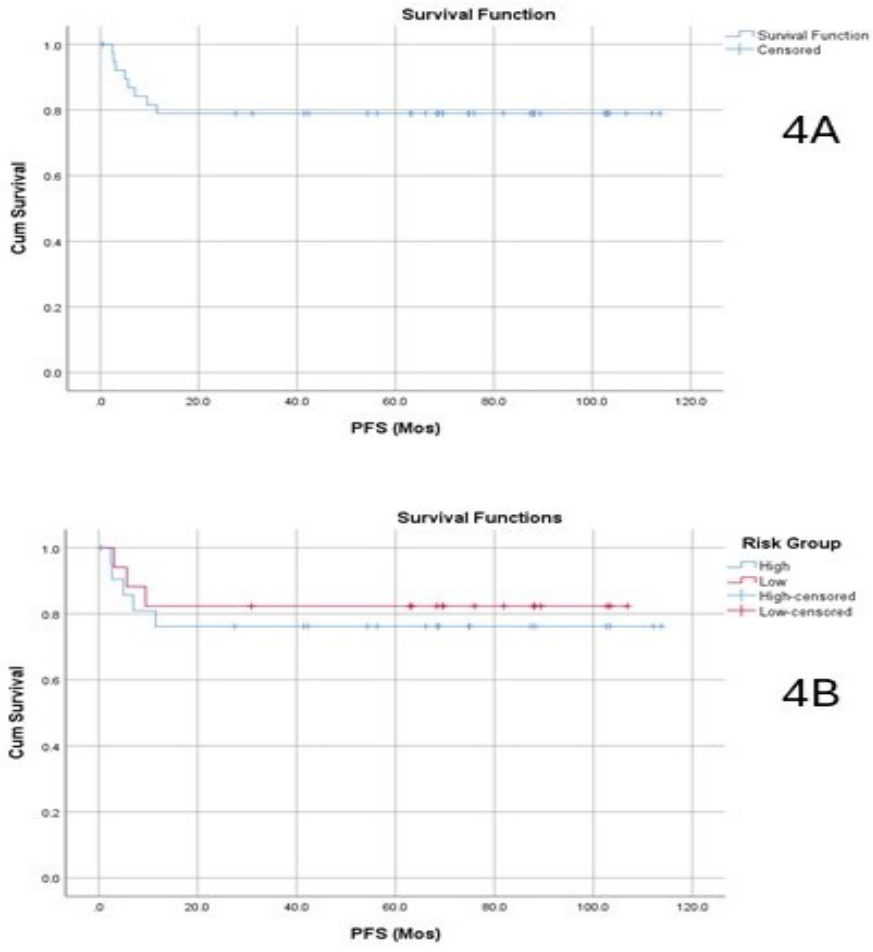

Figure 4: A. Median progression free survival (PFS) of overall study cohort; B. Median PFS of High risk (Blue) vs Low risk patient cohort

Median Overall survival (OS) was 68.5 months (Figure: 5A) with no statistical difference between the high and low risk cohorts (Figure 5B, p value: 0.807).

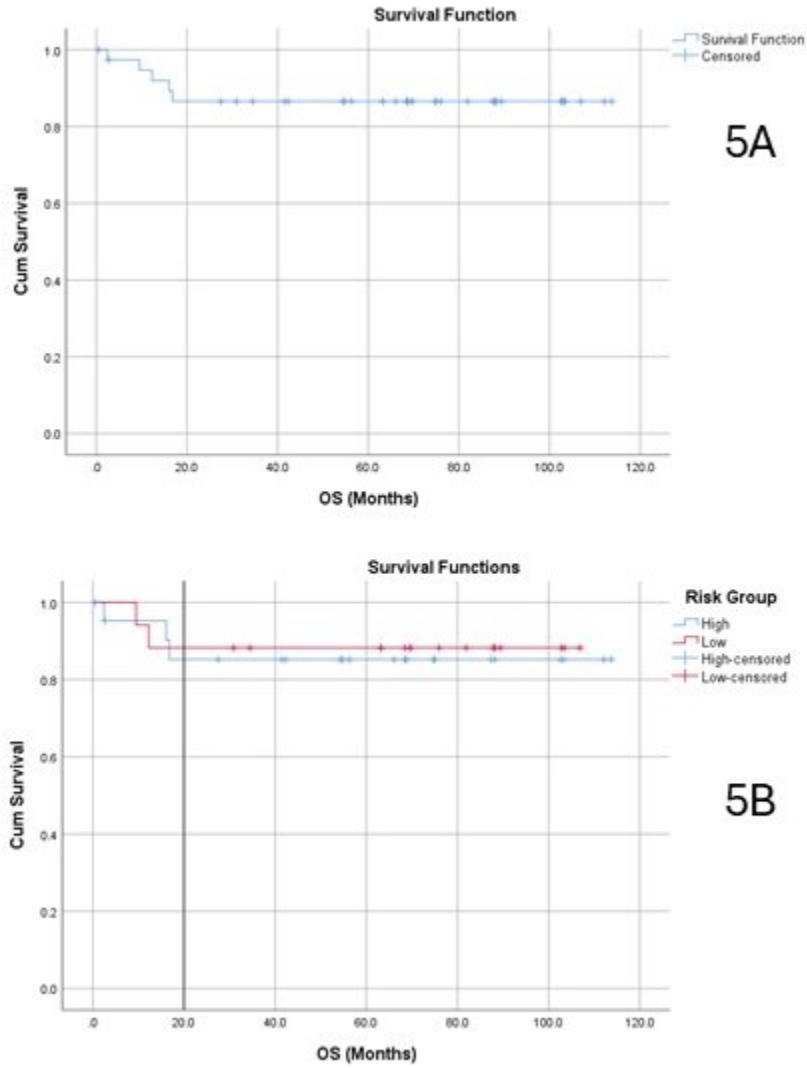

Figure 5: A. Median Overall survival (OS) of overall study cohort; B. Median OS of High-risk vs Low risk patient cohort

Characteristic	Median (Range)	n (%)
Age (Years)	28 (19-45)	
Religion		
Hindu		28 (72.0)
Muslim		11 (28.0)
Gravida	3 (1-8)	
Parity	2 (1-6)	
Prior use of OCPs/IUDs		
Yes		10 (26.0)
No		29 (74.0)
Dietary habits		
Vegetarian		23 (59.0)
Non-vegetarian		16 (41.0)
Addiction		
Yes		3 (8.0)
No		36 (92.0)
Family history		
Yes		0 (0.0)
No		39 (100.0)
Presenting Complaints		
Bleeding		36 (92.0)
Anaemia		33 (85.0)
Pain		27 (69.0)
Amenorrhea		6 (15.0)
Loss of Appetite		3 (8.0)
Breathing Difficulty		0 (0.0)
Duration (Months)	2 (1-8)	
BHCG	97530 (674-1000000)	
Antecedent Pregnancy		
Abortion		7 (18.0)
Term		13 (33.0)
Molar		19 (49.0)
Histopathology		
Partial Mole		11 (38.0)
Complete Mole		8 (22.0)
Diagnosis		
Invasive Mole		15 (38.0)
Choriocarcinoma		24 (62.0)
Interval from Pregnancy (Months)	8 (1-15)	
Largest Tumor Size (cm)	3 (1-7)	
Metastatic at time of diagnosis		

Yes		13 (33.0)
No		26 (67.0)
No. of Metastasis (Count)	5 (1-10)	
No. of Failed Chemotherapy	0 (0-1)	
Risk Group		
Low		17 (44.0)
High		22 (56.0)
Duration of treatment (weeks)	10 (2-16)	
Response		
CR		32 (82.0)
Residual (Refractory)		3 (8.0)
Absconded		4 (10.2)
Relapse		
Relapse		2 (5.0)
Lost to follow up		6 (15.4)
Time to relapse (Months)	5.7 (3.1-11.5)	
PFS (Months)	68.4 (0.5-114)	
OS (Months)	68.5 (0.5-114)	
Follow up (Months)	40.2 (0.5-89.4)	

Table 1: Demographic, clinical and treatment outcome profile of the study population

Discussion

This study provides valuable insights into the demographic, clinical, treatment, and outcome characteristics of Gestational Trophoblastic Neoplasia (GTN) patients treated at a tertiary care center of north India. Our findings are in line with global trends with regional specificities.

Median age of diagnosis of GTN in our study cohort was 28 years, with majority of the patients within 20-39 age brackets, reflecting prevalent of GTN in reproductive-aged women. Low incidence GTN in < 20 and > 40 years age group further supports this observation. Higher proportion of patients with vegetarian dietary habits (59%) reflects the regional demographic, though its etiological association on GTN requires further validation. Lower incidence of tobacco consumption and absence of familial cancer history suggest that they may not be significant factors contributing to GTN development.

Obstetric history with a median gravida of 3 and parity of 2, indicates that GTN is often associated with multiparity. Antecedent pregnancy with Molar pregnancy was most common (48.7%) type of pregnancy leading to GTN followed by term delivery (33.3%) and abortion (17.9%). This reflects strong association between molar pregnancies and subsequent GTN development, indicating a string need of strict follow up after molar pregnancy.

Partial hydatidiform mole was more frequent than complete hydatidiform mole in our study cohort with molar pregnancies, needs further exploration in larger studies. The predominance of choriocarcinoma (61.5%) over invasive mole (38.5%) as the final diagnosis in our GTN patients is notable and may reflect the referral patterns to a tertiary care oncology center.

Clinically, most common symptom at presentation was bleeding and thus anaemia, consistent with the highly vascular nature of trophoblastic tissue. Diverse presentation of GTN included symptoms like pain and amenorrhea. Median duration of 2 months between symptoms and diagnosis reflects rapidly progressive biology of this disease.

Risk adapted treatment approach using WHO Prognostic Scoring System has been successful in avoiding multiagent chemotherapy in patients with low risk of disease recurrence, without compromising on treatment results and survival outcomes. Survival analysis revealed no statistical difference in PFS and OS among patients with low vs high risk of patients. 82% patients experienced complete remission (CR) while 8 % patients had residual / refractory disease, who received further lines of chemotherapy. Among patients who achieved CR, 6 patients (15.4%) were reported lost to follow up, while 2 patients experienced relapse, indicating the effectiveness of the applied therapeutic strategies.

While the findings of this study seem promising, the limitation of this study is its small sample size, necessitate cautious interpretation.

Refference

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