

Nutritional Status, Food Consumption and the Level of Physical Activity of Women with Post-Molar Gestational Trophoblastic Neoplasia: Case Reports

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Estado Nutricional, Consumo Alimentar e Nível de Atividade Física de Mulheres com Neoplasia Trofoblástica Gestacional Pós-Molar: Relato de Casos

Estado Nutricional, Consumo de Alimentos y Nivel de Actividad Física de Mujeres con Neoplasia Trofoblástica Gestacional Posmolar: Informe de Casos

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ABSTRACT

Introduction: Post-molar gestational trophoblastic neoplasia (post-molar GTN) is a rare condition with high cure rates. However, the chemotherapeutic drug used for treatment can cause various side effects. Nutritional status, food intake, and physical activity can help reduce these effects. Therefore, this case reports aimed to evaluate the type of treatment, nutritional status, food intake, and physical activity, considering the scarcity of studies addressing these variables in patients with post-molar GTN. **Case reports:** Three women diagnosed with post-molar GTN between January 2023 and June 2024 were admitted to the oncology department of *Hospital das Clínicas* to begin chemotherapy. Data collection was performed before the therapy started (methotrexate and leucovorin administered every other day with a week-long rest interval). According to the nutritional status assessment, the patients were classified as overweight and obese, showing very high body fat percentage and low lean mass. Energy intake was above the recommended levels, while lipid and protein consumption was adequate, and carbohydrate intake was reduced. Regarding physical activity level, only one patient was classified as active. **Conclusion:** The patients' nutritional status was characterized by overweight and obesity, elevated body fat, low muscle mass, caloric intake exceeding recommendations, adequate lipid and protein consumption, and reduced carbohydrate intake, in addition to physical inactivity.

Key words: Gestational Trophoblastic Disease/drug therapy; Nutrition Assessment; Eating; Exercise; Health Status.

RESUMO

Introdução: A neoplasia trofoblástica gestacional pós-molar (NTG pós-molar) é uma condição rara com altas taxas de cura. No entanto, o quimioterápico utilizado para o tratamento pode causar diversos efeitos colaterais. O estado nutricional, o consumo alimentar e a atividade física podem auxiliar na redução desses efeitos. Diante disso, o presente relato de casos tem como objetivo avaliar o tipo de tratamento, o estado nutricional, o consumo alimentar e a atividade física, considerando a escassez de estudos que abordem essas variáveis em pacientes com NTG pós-molar. **Relato dos casos:** Três mulheres, diagnosticadas com NTG pós-molar, entre janeiro de 2023 a junho de 2024, deram entrada no setor de oncologia do Hospital das Clínicas para iniciarem a quimioterapia. A coleta de dados foi realizada antes do início da terapia (metotrexato e leucovorin, administrados em dias alternados com uma semana de pausa para descanso). De acordo com a avaliação do estado nutricional, as pacientes foram classificadas com sobrepeso e obesidade, apresentando percentual de massa adiposa muito alto e massa magra baixa. A ingestão de energia foi superior ao recomendado, enquanto o consumo de lipídeos e proteínas foi adequado e o de carboidratos, reduzido. Quanto ao nível de atividade física, apenas uma paciente foi classificada como ativa. **Conclusão:** O estado nutricional das pacientes foi de sobrepeso e obesidade, massa adiposa elevada, massa muscular baixa, ingestão calórica superior ao recomendado, consumo de lipídeos e proteínas adequado e de carboidratos reduzido, além de inatividade física.

Palavras-chave: Doença Trofoblástica Gestacional/tratamento farmacológico; Avaliação Nutricional; Ingestão de Alimentos; Exercício Físico; Nível de Saúde.

RESUMEN

Introducción: La neoplasia trofoblástica gestacional posmolar (NTG posmolar) es una condición rara con altas tasas de curación. Sin embargo, el quimioterápico utilizado para el tratamiento puede causar diversos efectos secundarios. El estado nutricional, el consumo alimentario y la actividad física pueden ayudar a reducir estos efectos. Por lo tanto, el presente reporte de casos tuvo como objetivo evaluar el tipo de tratamiento, el estado nutricional, el consumo alimenticio y la actividad física, considerando la escasez de estudios que aborden estas variables en pacientes con NTG posmolar. **Informes de casos:** Tres mujeres diagnosticadas con NTG posmolar, entre enero de 2023 y junio de 2024, fueron ingresadas en el departamento de oncología del Hospital de Clínicas para iniciar la quimioterapia. La recolección de datos se realizó antes del inicio de la terapia (metotrexato y leucovorina, administrados en días alternados con una semana de descanso). De acuerdo con la evaluación del estado nutricional, las pacientes fueron clasificadas con sobrepeso y obesidad, presentando un porcentaje de grasa corporal muy alto y baja masa magra. La ingesta de energía fue superior a la recomendada, mientras que el consumo de lípidos y proteínas fue adecuado y el de carbohidratos, reducido. En cuanto al nivel de actividad física, solo una paciente fue clasificada como activa. **Conclusión:** El estado nutricional de las pacientes se caracterizó por sobrepeso y obesidad, elevada masa grasa, baja masa muscular, ingesta calórica superior a la recomendada, consumo adecuado de lípidos y proteínas e ingesta reducida de carbohidratos, además de falta de actividad física.

Palabras clave: Enfermedad Trofoblástica Gestacional/tratamiento farmacológico; Evaluación Nutricional; Ingestión de Alimentos; Ejercicio Físico; Estado de Salud.

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INTRODUCTION

Hydatidiform mole is a non-viable benign tumor with potential for malignancy, its treatment requires uterine evacuation and monitoring of human chorionic gonadotrophin (hCG)¹. If this hormone does not reduce post evacuation, the progression to malignant post-molar gestational trophoblastic neoplasia (post-molar GTN)¹ occurs.

The international incidence of hydatidiform mole is one to two cases at each one thousand pregnancies¹. Of these, 15% to 20% evolve to post-molar GTN requiring chemotherapy treatment¹. According to the literature, the most common drug is methotrexate that can cause side effects².

Nutritional status and body mass directly interfere in the prognosis of the disease. A high percent of fat can harm or reduce the survival due to the systemic inflammatory context caused by obesity and proper body mass may promote protection during therapy and better recovery³.

Proper food intake does not only prevent the incidence since more cases are reported in countries where malnutrition is common², but also help during chemotherapy treatment⁴. In that line, physical activity is a tool that supports oncologic therapy to reduce fatigue, improvement of muscle mass and inflammatory condition, common aspects of the disease⁵.

Due to its low incidence and paucity of studies characterizing these patients, the objective of this report is to describe the nutritional status, body mass, food intake and physical activity in patients with post-molar GTN before initiating chemotherapy treatment.

CASES REPORT

This report is part of the study “*Consumo de nitrato, risco nutricional, força muscular e cognição em pacientes*

oncológicos em tratamento quimioterápico: um estudo de coorte prospectivo” conducted at a university hospital and reported according to CARE⁶ guidelines. The Ethics Committee of “*Hospital das Clínicas da Universidade Federal de Pernambuco (HC/UFPE)*” approved the study, report number 7,048,515 (CAAE (submission for ethical review): 64295722.9.3001.8807), in compliance with Directive 466/2012 of the National Health Council (CNS)⁷. All the participants signed the informed consent form (ICF).

The sample consisted in three women aged 37, 30 and 27 years assisted at the gynecology of HC/UFPE and initially diagnosed with hydatidiform mole. After uterine evacuation, histology and serial monitoring of hCG, it occurred persistent elevation of hormone levels, confirming progression to post-molar GTN¹. The patients were referred to the oncology to begin chemotherapy treatment, oncologic staging has not been concluded at collection. Table 1 shows the result of the biopsy and chemotherapy regimen applied.

All the patients received the same regimen methotrexate associated with leucovorin, administered every other day during eight days followed by 7-day interval for recovery, repeating the cycle until negative hCG and further follow-up at gynecology. The most reported side effects were nausea, vomits, diarrhea and stomatitis with impact on the patients' quality of life.

The nutritional status was evaluated with weight, height and body mass index (BMI) classified according to common cutoff values and body mass obtained by electric bioimpedance (OMRON HBF-226) which provided the percent of muscle and fat mass. Table 2 presents these data, all the patients were overweight with BMI compatible with obesity, very elevated fat percent and low muscle mass.

Food intake was evaluated by 24-hour recall conducted during the oncologist consultation when the last 24-hour food intake was obtained. The data were tabulated

Table 1. Biopsy and chemotherapy regimen (Recife/PE, 2025)

Patients	Variable
	Biopsy
PT 1	High risk trophoblastic disease
PT 2	Trophoblastic disease with appearance of hydatidiform mole
PT 3	Gestational trophoblastic disease with histological findings of hydatidiform mole
	Treatment regimen/Number of cycles/ Duration (months)
PT 1	Methotrexate + leucovorin/6/2.8
PT 2	Methotrexate + leucovorin/8/3.5
PT 3	Methotrexate + leucovorin/7/3.1

Caption: PT = patient.

through the nutrition software Calcnut⁸ and compared with the recommendations of the “*Sociedade Brasileira de Nutrição Oncológica*” (SBNO) and Dietary Reference Intakes (DRI). The adequacy of caloric and protein intake was performed according to SBNO (2021) that recommends the intake of 11-14 calories per kilo of body weight (kg) for obese patients and 1 gram of protein/kg for patients without mild stress and nourished which is the case of the study sample. For severe critical cases, the recommendation is 2.5 grams of protein. Since SBNO has no specific recommendation for lipids and carbohydrates, DRI was utilized as base with intake of 20%-35% and 45%-65% of the total energetic value, respectively.

Table 3 shows food intake and minimal and maximal recommended values according to DRI (2023) and SBNO (2021).

The level of activity measured through the International Physical Activity Questionnaire – Short Form (IPAQ)⁹ revealed that patient 1 was active, while 2 and 3 were physically inactive.

DISCUSSION

Three women diagnosed with pre-molar GTN beginning treatment with methotrexate and leucovorin were overweight or obese, very elevated body fat index, low muscle mass, high calory intake above the recommendation, proper proteins and lipids intake, reduced intake of carbohydrates and low physical activity practice, two of them were physically inactive. These findings, although obtained from a small sample contribute to the understanding of the nutritional profile and lifestyle of this rare condition.

Table 2. Evaluation of the nutritional status and body mass (Recife/PE, 2025)

Patients	Variables	
	Weight	Nutritional status (BMI - kg/m²)/Classification
PT 1	92.0	41.3/Obesity III
PT 2	100.4	38.7/Obesity II
PT 3	73.7	28.4/Overweight
	Body mass (BIA - % muscle)/Classification	
PT 1		19.5/Low
PT 2		22.6/Low
PT 3		22.0/Low
	Body mass (BIA - % adipose)/Classification	
PT 1		56.0/Very high
PT 2		50.1/Very high
PT 3		46.7/Very high

Captions: BMI = body mass index; % = percent; BIA = bioelectrical impedance analysis; PT = pa

Table 3. Analysis of food intake of the population investigated (Recife/PE, 2025)

PT	Regular intake/ Recommended intake of energy (Minimal - Maximal)			
	Energy (Kcal)	PTN (g)	LIP (g)	CHO (g)
PT 1	1495.0/(1.012.0 – 1.288.0)	82.8/(92.0 - 230.0)	19.5/(50.1 - 87.7)	247.0/(253.7 - 366.5)
PT 2	2547.0/(1.102.2 – 1.402.8)	181.8/(100.2 - 250.5)	86.6/(54.7 - 96.0)	260.1/(277.7 - 401.1)
PT 3	2175.0/(1.900.0 – 2.280.0)	130.0/(76.0 - 190.0)	76.7/(49.3 - 86.3)	241.3/(249.5 - 360.4)

Captions: PT = patient; PTN = protein; LIP = lipid; CHO = carbohydrate.

Note: PTN calculated according to SBNO; LIP and CHO calculated based on DRI.



Obesity is common in several gynecologic tumors as endometrium cancer and have been described in GTN¹⁰. Studies with larger samples show variable prevalence of overweight and obesity in these cases: Edesa et al.¹⁰ reported nearly 60% of overweight patients and Maestá et al.¹¹ observed approximately 27% with tendency of increased BMI in their lifetime consistent with nutritional transition. The three patients investigated were overweight, reinforcing obesity as a potential additional risk factor of GTN.

Obesity can be associated with worse prognosis in malignant tumors according to physiopathology, due to chronic inflammatory condition, insulin-resistance and alterations of chemotherapy's pharmacokinetic^{3,4}. Evidences suggest that the activity of the cytochrome CYP2E1 is increased in obese individuals, elevating the oxidative stress and in combination with methotrexate can contribute to hepatotoxicity and nephrotoxicity^{12,13}. In patients already exposed to a potentially toxic chemotherapy regimen, very elevated adiposity and low muscle mass as observed in the present study, can increase the vulnerability to adverse effects and clinical complications.

The food pattern identified deserves attention as well. All the patients had calory intake above the recommended and carbohydrate intake below the interval suggested, which can be interpreted as an imbalance of the offer of energy during treatment with potential repercussions on fatigue, response to effort and tissue recovery. The literature indicates association among nutritional deficiencies and development of hydatidiform mole, highlighting poor protein, animal fat, folic acid, vitamin A and other micronutrients intake in proliferation of trophoblastic cells and worsening of oxidative stress¹⁴. Therefore, balanced nutrition with proper energy intake and antioxidant compounds is a relevant component of care provided to patients with GTN.

Two of the three patients were classified as inactive (low physical activity) prior to chemotherapy. Physical activity in oncologic patients has been associated with reduced fatigue, maintenance of cardiorespiratory capacity and improved quality of life, in addition to potential favorable influence on the pharmacokinetics of antineoplastic agents^{4,5}. Observational studies indicate that elevated levels of physical activity before and after chemotherapy can contribute to preserve maximal oxygen uptake and better tolerance to treatment^{5,9}. Although it is not possible to determine causality from this report, the data reinforce the importance of physical activity matched to GTN clinical conditions.

Integrative studies addressing nutritional status, body mass, food intake and level of physical activities

in women with post-molar GTN are scarce. Apparently, this is the first study describing systematically these variables in patients evaluated before chemotherapy. The study strengths are the multidimensional approach of the patients, the utilization of standard instruments in clinical practice (bioimpedance, patient-generated subjective global assessment – PG-SGA, 24-hour recall based on specific recommendations and IPAQ) and prospective data collection within the context of a previously structured protocol. These aspects ensure improved internal consistency of the findings and offer a thorough perspective that can help to organize nutritional care and guidelines of physical activity in oncology for patients with pre-molar GTN.

The limitations of the study are the reduced number of the cases consistent with the rarity of the disease in only one site, an obstacle to the generalizability of the results, although it allowed the thorough clinical and nutritional description. The 24-hour recall- based evaluation of food intake is passible of memory biases and atypical days, partially minimized by the investigation of regular intake of each meal. Similarly, the level of physical activity was estimated by self-report which can overestimate daily life activities. In addition, the evaluation was cross-sectional for pre-chemotherapy alone, impeding to infer causality or following up the evolution of the patients during and after the treatment. Still, the data fill in an important gap of the literature and highlight the necessity of multicenter studies with larger samples and longitudinal design to confirm and expand the evidences described herein.

CONCLUSION

This report of three cases of post-molar GTN described overweight or obese patients, very elevated fat percent, low muscle mass, high calory intake above the recommendation, proper intake of lipids and protein, reduced intake of carbohydrates and low practice of physical activity and two of the patients inactive. Although based on a small sample and descriptive only, the study contributed to fill in the gap of information about the nutritional profile and physical activity of women with post-molar GTN and reinforces the necessity of prospective studies investigating the relation of these variables with the clinical evolution of this population.

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CONTRIBUTIONS

All the authors contributed substantially to the study conception and design, acquisition, analysis and interpretation of the data, writing and critical review. They approved the final version for publication.

DATA AVAILABILITY STATEMENT

All the content underlying the text is contained in the manuscript.

DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interest to declare.

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