RESULTS OF CHEMOTHERAPY PACLITAXEL - CARBOPLATI TREATMENT IN METASTATIC THYMIC CARCINOMA AT VIETNAM NATIONAL CANCER HOSPITAL

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ABSTRACT

Objective: Evaluation of clinical and paraclinical characteristics and treatment results of Paclitaxel-Carboplatin in metastatic thymic carcinoma at Vietnam National Cancer Hospital.

Subjects and Methods: A retrospective study with longitudinal follow-up on patients diagnosed with metastatic thymic carcinoma (AJCC 8th edition), treated with the Paclitaxel-Carboplatin chemotherapy regimen from 2020 to 2024 at Vietnam National Cancer Hospital.

Results: The study included 20 patients with an average age of 56.4 years; 65% were male and 35% were female. ECOG 0 accounted for 70% and ECOG 1 for 30%. The predominant histological type was squamous cell carcinoma (70%). The treatment results showed a response rate of 45% and a disease control rate (DCR) of 75%. The median progression-free survival (mPFS) was 8.7 months after a follow-up of 15.6 months. Hematologic toxicity related to the regimen included anemia in 55% of patients (grade 3 in 5%) and neutropenia in 55% (grade 3 in 10%). Non-hematologic toxicity was commonly observed in the peripheral nervous system (40%) and elevated AST/ALT levels (45%), mainly grades 1 and 2.

Conclusion: The combination of paclitaxel and carboplatin is an effective treatment option for metastatic thymic carcinoma in patients who have not previously received systemic therapy.

Keywords: Thymic carcinoma; Metastasis; Paclitaxel-Carboplatin.

1. INTRODUCTION

Thymic carcinoma is a rare malignant tumor located in the anterior mediastinum, accounting for approximately 5÷36% of all malignant thymic neoplasms[1-3]. Due to its rarity, only a limited number of patients have been analyzed in published studies to date. Complete surgical resection remains the most effective treatment, significantly improving survival. Chemoradiotherapy plays a supportive role postoperatively in some cases or is used when the disease is unresectable due to extensive local invasion. However, approximately 20÷30% of patients are diagnosed at advanced stages, with widespread metastasis, rendering local treatment unfeasible[4]. In such cases, systemic chemotherapy becomes crucial. Several studies have shown the efficacy of cisplatin-based combination therapies, such as ADOC (cisplatin, doxorubicin, vincristine,

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and cyclophosphamide) and CODE (cisplatin, vincristine, doxorubicin, and etoposide) in treating thymic tumors[5-6]. Although these regimens have shown promising response rates, most patients in those studies were diagnosed with thymoma rather than thymic carcinoma and high rates of severe toxicity were reported. In contrast, newer anticancer agents-such as irinotecan, paclitaxel, docetaxel, gemcitabine, and vinorelbine-developed in the 1990s exhibit different mechanisms of action from older agents like vindesine, vinblastine, and etoposide. As a result, platinum-based combination regimens with these newer agents have been proposed for epithelial-origin solid tumors, including thymic carcinoma. A phase II clinical trial conducted across 21 cancer centers in Japan between 2008 and 2011 evaluated paclitaxel-carboplatin in patients with stage IV thymic carcinoma. The trial reported an overall response rate of 36% and a median progression-free survival (PFS) of 7.5 months[7]. Another study conducted in China in 2014 reported a median PFS of 3.5 months and a median overall survival (OS) of 24 months[8].

To date, no studies in Vietnam have evaluated the treatment of metastatic thymic carcinoma. Therefore, we conducted this study with the following objectives:

- To assess the clinical and paraclinical characteristics of patients with metastatic thymic carcinoma treated with the paclitaxel–carboplatin regimen at Vietnam National Cancer Hospital.

- To evaluate the treatment outcomes in this patient group.

2. PATIENTS AND METHODS

2.1. Study subjects

A total of 20 patients with metastatic thymic carcinoma who received Paclitaxel-Carboplatin chemotherapy at Vietnam National Cancer Hospital from 2020 to 2024.

Inclusion criteria

Histologically confirmed thymic carcinoma, classified according to the 2015 WHO classification.

Stage IV disease based on the AJCC 8th edition.

Age ≥18 years.

ECOG performance status of 0 or 1.

No prior chemotherapy.

Received at least 2 cycles of the Paclitaxel Carboplatin regimen.

Adequate liver, renal and bone marrow function for chemotherapy.

Complete medical records available.

Exclusion criteria

Diagnosis of a second primary cancer.

Pregnant or breastfeeding women.

Presence of life-threatening comorbidities (e.g., decompensated heart, liver, or kidney failure).

Discontinuation of treatment for non-medical reasons (not due to disease progression or intolerance to side effects).

2.2. Research methods

Study design: Descriptive case series.

Sampling method: Convenience sampling of 20 patients.

3. RESULTS

3.1. Clinical and paraclinical characteristics

Patient Characteristics	N = 20 (%)
Age	
Average (X ± SD)	56,4 ± 8,7 (years)
Gender	
Male	13 (65%)
Female	7 (35%)

Performance Status (ECOG)	
PS 0	15 (75%)
PS 1	5 (25%)
Histopathology	
Squamous cell carcinoma	14 (70%)
Carcinoma, NOS	2 (10%)
Lymphoepithelioma-like carcinoma	1 (5%)
Large cell neuroendocrine carcinoma	1 (5%)
Disease Stage	
Stage IVA	8 (40%)
Stage IVB	12 (60%)
Myasthenia Status	
Present	1 (5%)
Absent	19 (95%)

Comment: The average age of patients was 56.4 years, with a male predominance (65%). The most common histological subtype was squamous cell carcinoma (70%). The most frequent metastatic sites were pleura, bone and lung. One patient (5%) was diagnosed with grade 2 myasthenia gravis.

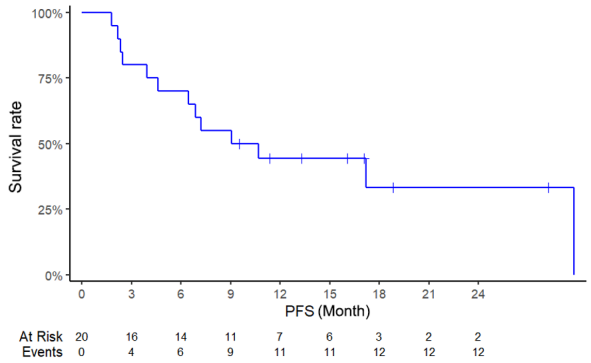
3.2. Treatment Outcomes

3.2.1. Overall response rate (ORR)

Response	N	%
Complete response	0	0
Partial response	9	45
Stable disease	6	30
Progressive disease	5	25
ORR (%)	45%	
DCR (%)	75%	

Comment: Partial response was achieved in 45% of patients, with stable disease observed in 30%. Disease progression occurred in 25% of patients. The overall response rate was 45%, and the disease control rate (partial response + stable disease) reached 75%.

3.2.2. Progression-free survival (PFS)



Comment: With a median follow-up duration of 15.6 months, the median progression-free survival (PFS) was 8.7 months.

3.2.3. Adverse events of the paclitaxel-carboplatin regimen

Toxicity	Adverse Events (%)				
	Total (n=20)	Grade 1	Grade 2	Grade 3	Grade 4
Hematologic Toxicity					
Leukopenia	11 (55%)	6 (30%)	3 (15%)	2 (20%)	0
Neutropenia	8 (40%)	4 (20%)	2 (20%)	2 (20%)	0
Thrombocytopenia	4 (20%)	3 (15%)	1 (5%)	0	0
Anemia	11 (55%)	8 (40%)	2 (10%)	1 (5%)	0

Toxicity	Adverse Events (%)				
	Total (n=20)	Grade 1	Grade 2	Grade 3	Grade 4
Non-Hematologic Toxicity					
Peripheral Neuropathy	8 (40%)	7 (35%)	1 (5%)	0	0
Elevated AST/ALT	9 (45%)	7 (35%)	2 (10%)	0	0
Nausea/Vomiting	5 (25%)	4 (20%)	1 (5%)	0	0

Comment: The most commonly observed hematologic toxicities were anemia and leukopenia, predominantly at Grade 1–2. Thrombocytopenia was less frequent, and no cases of febrile neutropenia or bleeding due to thrombocytopenia were reported. Among non-hematologic toxicities, peripheral neuropathy and elevated liver enzymes (AST/ALT) were the most frequently encountered, mostly mild (Grade 1). Importantly, no Grade 4 toxicity was recorded in any of the patients.

4. DISCUSSION

Thymic carcinoma, particularly in its metastatic stage, presents a major therapeutic challenge, as patients are often ineligible for local treatments such as surgery or radiotherapy. Moreover, no standardized chemotherapy regimen has yet been established for this stage of the disease.

In our study, 20 patients diagnosed with metastatic thymic carcinoma were treated with the Paclitaxel carboplatin regimen. The average patient age was 56.4 years, with a predominance of male patients (65%). Histologically, squamous cell carcinoma was the most common subtype (70%), consistent with global epidemiological data on thymic carcinoma. Notably, our cohort also included one case of large cell neuroendocrine carcinoma and one case of lymphoepithelioma-like carcinoma, highlighting the histological heterogeneity in this rare malignancy. Histopathological subtype has been considered a key prognostic factor in thymic carcinoma, with squamous cell histology associated with better treatment responses, while other subtypes may be less sensitive to chemotherapy. In our series, pleural and pulmonary metastases were commonly observed, with 60% of patients classified as stage IVB, underscoring the aggressive and poor-prognosis nature of the disease. Additionally, one patient (5%) presented with myasthenia gravis (Grade 2), further complicating the clinical picture.

Our findings showed a partial response rate of 45%, which is higher than previously reported by Igawa (2010) and Lenma (2008), who documented partial response rates of 36% and 28%, respectively. Disease stabilization was observed in 30% of patients, and only 25% showed progressive disease, indicating encouraging disease control using the Paclitaxel carboplatin combination. However, no complete responses were achieved, reflecting the ongoing challenge in managing advanced thymic carcinoma.

The median progression-free survival (PFS) was 8.5 ± 1.0 months, aligning with prior studies, such as Furugen (2011) reporting 8.6 months, Igawa (2010) 7.9 months and Hirai (2015) 7.5 months.

Historically, anthracycline-based chemotherapy regimens were considered standard in treating thymic epithelial tumors, with Loehrer et al. reporting a 50% response rate and a median overall survival of 37.7 months in patients treated with PAC. However, cardiotoxicity, prior mediastinal radiation, advanced patient age, and comorbid pulmonary conditions have limited the use of anthracyclines, leading to increasing interest in non-anthracycline regimens, such as Paclitaxel carboplatin, which is now widely adopted. While response rates have not markedly

improved, these regimens offer better tolerability profiles.

In our study, the toxicity profile of the Paclitaxel carboplatin regimen was manageable. The most common hematologic adverse events were anemia and leukopenia, primarily Grade 1–2, with no cases of febrile neutropenia reported. Thrombocytopenia was less frequent, and no bleeding events were observed. Among non-hematologic toxicities, peripheral neuropathy and elevated AST/ALT levels were the most common, again primarily Grade 1. Importantly, no Grade 4 toxicity was recorded, suggesting an acceptable safety profile. These findings are consistent with previous studies, such as the Phase II multicenter trial by Hirai (2015) and the study by Song (2014), which reported similar toxicity patterns.

5. CONCLUSION

5.1. Clinical and paraclinical characteristics

Mean age: 56.4 ± 8.7 years, male (65%), female (35%), ECOG PS: 75% with PS 0, 25% with PS 1.

Histology: Predominantly squamous cell carcinoma (70%), Stage: 40% stage IVA, 60% stage IVB, myasthenia gravis was observed in one patient prior to treatment.

5.2. Treatment outcomes

Objective response rate (ORR): 45% (no complete responses), Disease control rate (DCR): 75%, Median progression-free survival (mPFS): 8.7 months.

Common toxicities: Hematologic: Leukopenia (40%), anemia (55%), mostly Grade 1–2; Non-hematologic: Peripheral neuropathy (40%), elevated AST/ALT (45%), mostly Grade 1–2.

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