Case Report

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Recurrence of Germ Cell Testicular Tumor Presenting with Choriocarcinoma Syndrome and Acute Pancreatitis

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Abstract

Choriocarcinoma syndrome (CS), characterized by pulmonary hemorrhage, widespread metastases, and markedly elevated beta-human chorionic gonadotropin levels, poses significant challenges in both diagnosis and treatment. In this case report, we present a rare case of recurrent mixed germ cell testicular tumor presenting to the emergency department with acute respiratory distress syndrome (ARDS) secondary to CS and pancreatitis. CS is a rare but highly fatal syndrome, often arising as a complication of advanced-stage germ cell tumors. Since these patients primarily present to emergency departments, it is crucial for emergency physicians to consider CS in the differential diagnosis when young male patients with a history of testicular tumors present with acute respiratory distress, hemoptysis, abdominal pain, or symptoms resembling pancreatitis.

Keywords: Choriocarcinoma syndrome, Emergency department, Germ cell testicular tumors, Pancreatitis

Introduction

Germ cell testicular tumors (GCTs) are among the most common malignant neoplasms in males aged 15-35 years and are classified into seminomatous and non-seminomatous subtypes. Non-seminomatous germ cell tumors (NSGCTs) include yolk sac tumors, choriocarcinoma, embryonal carcinoma, teratoma, or mixed tumors comprising combinations of these subtypes. Mixed germ cell tumors, accounting for approximately 30-50% of NSGCTs, are of particular importance due to their high malignant potential and propensity for metastasis to distant organs (1,2).

Tumors containing choriocarcinoma components are prone to necrosis and hemorrhage due to rapid proliferation and vascularization, potentially leading to life-threatening complications. Choriocarcinoma syndrome (CS), characterized by pulmonary hemorrhage, widespread metastases, and markedly elevated beta-human chorionic gonadotropin (β-HCG) levels, poses significant challenges in both diagnosis and treatment (3,4). Additionally, mature pancreatic tissue present within teratomas may exhibit endocrine or exocrine function, manifesting as clinical and radiological findings such as pancreatitis or hypoglycemia (5).

In this case report, we present a rare case of recurrent mixed germ cell testicular tumor presenting to the emergency department (ED) with acute respiratory distress syndrome (ARDS) secondary to CS and pancreatitis.

Case Report

A 31-year-old male presented to the ED with complaints of sudden-onset abdominal pain and shortness of breath. His symptoms had begun approximately one hour prior, without associated nausea, vomiting, cough, or sputum production. Initial vital signs revealed an oxygen saturation of 55%, blood pressure of 190/120 mmHg, a pulse rate of 120 bpm,body temperatureof 37.5°C, and heart rhythm wasregular.

Physical examination showed tenderness in the upper abdominal quadrants, diffuse crackles, and bronchospasm on lung auscultation.Neurological examination revealed no altered mental status or focal deficits.Electrocardiogram (ECG) findings demonstrated sinus tachycardia with non-specific ST-T wave changes.

The patient's medical history revealed that he had undergone orchiectomy for a testicular tumor three years earlier, followed by three cycles of chemotherapy. Post-

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treatment Positron Emission Tomography-Computed Tomography (PET-CT) showed no residual disease, and therapy was discontinued. The patient reported being symptom-free for the past two years and had not attended follow-up appointments. The pathology report indicated that the excised 17 × 13 × 12 cm orchiectomy specimen consisted of a mixed germ cell tumor comprising 40% choriocarcinoma, 40% teratoma, and 20% yolk sac tumor.

Before performing laboratory and imaging studies, alternative diagnoses such as cardiac emergencies, acute asthma exacerbation, acute pulmonary edema, aortic dissection and thyrotoxicosis were considered due to the patient's clinical presentation.

Laboratory tests performed in the ED revealed elevated amylase (358 U/L) and lipase (733 U/L) levels, marked leukocytosis (WBC 23.5 × 10^3/μL), and a significantly increased β-HCG (3179.77 IU/L). Thyroid function tests were within normal limits; therefore, thyrotoxicosis was ruled out.Additional laboratory findings are summarized in Table 1.

Table 1: Laboratory results of the patient

Biochemistry Tests	Complete Blood Count	Blood Gas Analysis
Glucose: 54 mg/dL	WBC: 23.5 x10^3/μL	pH: 7.515
Urea: 30 mg/dL	RBC: 4.3 x10^3/μL	PCO2: 21.0 mmHg
Creatinine:0.92mg/dL	HGB: 13.2 g/dL	PO2: 45.5 mmHg
Total Bilirubin: 5.8 mg/dL	HCT: 39.0%	$HCO3^-$ (actual): 16.6 mmol/L
Direct Bilirubin: 0.8 mg/dL	MCV: 90.4 fL	BE: -4.2 mmol/L
ALT: 66 IU/L	MCH: 30.6 pg	SO2: 80.1%
AST: 132 IU/L	PLT: 108.0 x10^3/μL	Na^+: 136.2 mmol/L
GGT: 93 U/L		K^+: 3.84 mmol/L
LDH: 992 IU/L		Ca^{2+}: 1.02 mmol/L
Amylase: 358 U/L		Cl^-: 113 mmol/L
Lipase: 733 U/L		Hb: 13.2 g/dL
CRP: 192 mg/L		$HCO3^-$ (standard): 20.6mmol/L
β-HCG: 3179.77 IU/L		

ALT: Alanine Aminotransferase, AST: Aspartate Aminotransferase, GGT: Gamma-Glutamyl Transferase, LDH: Lactate Dehydrogenase, CRP: C-Reactive Protein, β-HCG: Beta-Human Chorionic Gonadotropin, WBC: White Blood Cells, RBC: Red Blood Cells, HGB: Hemoglobin, HCT: Hematocrit, MCV: Mean Corpuscular Volume, MCH: Mean Corpuscular Hemoglobin, PLT: Platelets, PCO2: Partial Pressure of Carbon Dioxide, PO2: Partial Pressure of Oxygen, HCO_3^-: Bicarbonate, BE: Base Excess, SO_2: Oxygen Saturation, Na^+: Sodium, K^+: Potassium, Ca^{2+}: Ionized Calcium, Cl^-: Chloride, Hb: Hemoglobin

Contrast-enhanced thoracic and abdominal computed tomography revealed the following findings:

- Multiple hypodense nodular lesions in liver segments, some with peripheral contrast enhancement and others non-enhancing,
- An enlarged pancreas with heterogeneous parenchyma and poorly defined hypodense nodular areas,
- 1 cm nodular lesion in the upper pole of the spleen,
- Widespread hypodense nodules in both kidneys,
- Multiple air cysts, nodules, and diffuse ground-glass opacities in both lungs.

The imaging findings were suggestive of widespread metastatic disease and CS (Figure 1).

Given the patient's rapidly worsening hypoxia, altered mental status, and hemodynamic instability, he was emergently intubated in the ED and placed on mechanical ventilation. The decision for intubation was based on profound respiratory failure, a high risk of airway compromise due to hemoptysis, and deteriorating hemodynamic parameters. Following stabilization, the patient was admitted to the intensive care unit (ICU) with diagnoses of acute pancreatitis and ARDS. Despite aggressive supportive care, including mechanical ventilation, vasopressor support, and broad-spectrum antibiotics, the patient succumbed on the third day of ICU stay.

Discussion

This case presents a fatal complication of CS, characterized by pancreatitis and ARDS, resulting from recurrent mixed germ cell testicular tumor and widespread metastases in a young male. This syndrome, characterized by elevated β-HCG levels, widespread metastatic involvement, and rapid progression, stands out as a significant clinical entity that requires a multidisciplinary approach in both diagnosis and treatment.

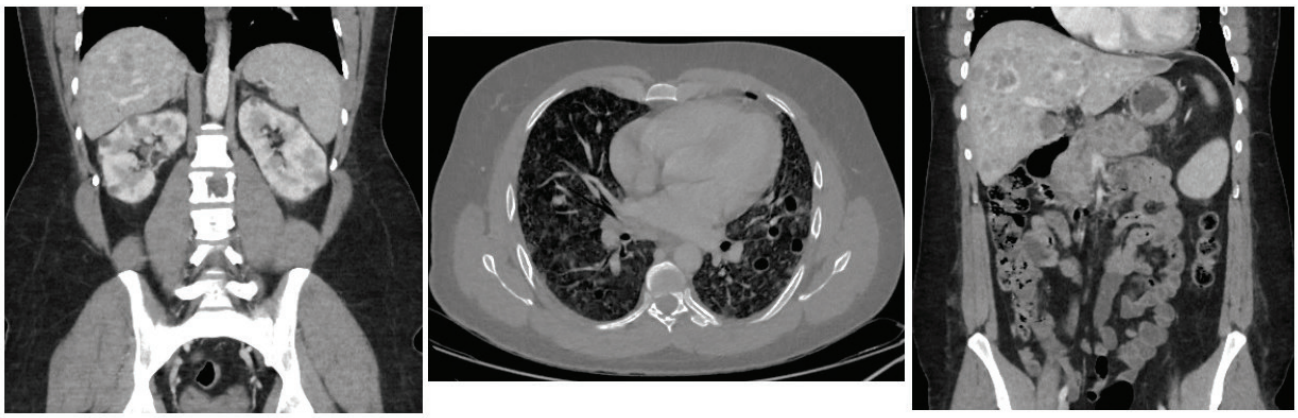

Figure 1. Thorax and abdomen CT of the patient

GCTs are common in young males, but the rarity of CS as a complication makes it challenging for many clinicians to recognize this clinical presentation. Although the exact pathogenesis of CS remains unclear, direct invasion of small vessels by tumor cells and the high vascularization in these areas are proposed as the primary mechanisms leading to hemorrhages at metastatic sites. Notably, diffuse alveolar hemorrhage, which occurs in lung metastases, is both a typical complication of CS and one of the most common causes of death (6-9). This case exemplifies how the development of ARDS due to lung involvement determined the prognosis and how no response was achieved with treatment.

The presence of pancreatitis in this patient is an uncommon but recognized finding in mixed germ cell tumors, and it aligns with certain teratoma cases reported in the literature. Teratomas are known to exhibit exocrine or endocrine activity due to the mature pancreatic tissue they contain (5,9-11). This case suggests that pancreatitis may have developed as a result of both the systemic effects of CS and the teratoma component of the tumor. Furthermore, the coexistence of multisystem complications such as pancreatitis and ARDS has posed additional challenges in clinical management.

In the treatment of CS, close hemodynamic monitoring and prompt intervention in the intensive care unit are essential. However, there is still no consensus on the optimal chemotherapy regimen and timing based on current data. While early recognition of CS may allow for the use of low-dose chemotherapy or induction therapies that could reduce mortality, there is insufficient prospective data to support this (3,4,8,9). In our case, the patient had received chemotherapy two years after orchiectomy, achieved remission, and showed no metastatic involvement at that time. However, due to the absence of any symptoms in the following two years, the patient did not attend follow-up visits. The sudden onset of dyspnea and abdominal pain initially led to other differential diagnoses, but through a detailed history, review of previous tests, imaging findings, and a literature search, the diagnosis was confirmed. Nevertheless, because CS is an aggressive and often fatal complication, the patient passed away on the third day despite supportive therapy.

In conclusion, CS is a rare but highly fatal syndrome, often arising as a complication of advanced-stage germ cell tumors. This case emphasizes the importance of careful monitoring of tumor recurrence and the need to anticipate systemic complications that may develop in metastatic disease. Since these patients primarily present to EDs, it is crucial for emergency physicians to consider CS in the differential diagnosis when young male patients with a history of testicular tumors present with acute respiratory distress, hemoptysis, abdominal pain, or symptoms resembling pancreatitis.

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