

# Stage IV B Cell Lymphoma Requiring Urgent Chemotherapy During Pregnancy

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## Introduction

Hematologic malignancies complicate 0.02% of all pregnancies. Primary mediastinal B cell lymphoma (PMBCL) is very rare, occurring in 2-3% of patients with Non-Hodgkin lymphoma.<sup>1</sup> Complete chemotherapy is often initiated after delivery due to concern for adverse fetal outcomes. We describe a pregnant patient with stage IV PMBCL requiring urgent chemotherapy at 27 weeks gestation.

## Case Description

A healthy 30 year-old patient, G2P1, at 27 weeks gestation presented with vomiting, anorexia, and acute back pain, with:

- Elevated bilirubin: 2.9 mg/dL
- Transaminitis: AST 98, ALT 158 u/L
- 8 x 7 x 7 cm pancreatic mass extending to the duodenum
- 13 x 8 x 10 cm mediastinal mass with lung compression and rightward midline shift (Figure 1a)

The patient was diagnosed with stage IV PMBCL via flow cytometry.

During the patient's hospitalization, a transhepatic biliary drain was placed due to complete obstruction from a pancreatic mass. Modified chemotherapy consisting of cyclophosphamide, doxorubicin, vincristine, and prednisone (CHOP), with the teratogenic agents rituximab and etoposide omitted, was initiated to reduce tumor burden. She received 2 cycles of this chemotherapy. Her course was complicated by neutropenic fever and coagulopathy (INR 1.9). Cesarean delivery was planned at 34 weeks gestation in order to start more effective chemotherapy post-delivery.

Three months post-diagnosis, the mass had significantly decreased in size. (Figure 1b, 1c)

## Figure 1



Figure 1a: Thoracic MRI scan demonstrating a 13 x 8 x 10cm mediastinal mass  
Figure 1b, 1c: Thoracic CT scan demonstrating a 5 x 5 x 7 cm mediastinal mass

### Preoperatively

- Correction of coagulopathy from obstructing pancreatic mass with vitamin K and fresh frozen plasma
- Evidence of normal thromboelastogram
- Veno-arterial extracorporeal membrane circulation sheaths placed

### Intraoperatively

- Two 16-gauge IV lines & arterial line placed
- Combined spinal-epidural technique (intrathecal dosing: bupivacaine 8 mg, fentanyl 15 mcg, morphine 150 mcg) with incremental dosing of 20 mL lidocaine 2% (with epinephrine 1:200,000) to achieve a bilateral T5 level
- Patient remained hemodynamically stable
- A healthy neonate was delivered, 2.6 kg, with Apgar scores of 8 and 9, at 1 and 5 minutes

### Postoperatively

- Patient admitted to oncology
- Due to failure of 2 cycles of CHOP, Modified McGrath chemotherapy (R-IVAC with IT methotrexate) was started on POD 5
- Two months later, PET scan showed response to chemotherapy and chimeric antigen receptor T-cell (CAR-T) therapy was initiated

## Conclusion

PMBCL responds best to initial chemotherapy, which could not be delayed in this case due to complete biliary obstruction. Modified chemotherapy with CHOP was initiated to reduce tumor burden while optimizing neonatal outcome by limiting teratogenic exposure and extending the duration of pregnancy. Etoposide has been shown to lead to fetal cranial abnormalities and skeletal malformations, while rituximab has been linked to spontaneous abortion, pre-term delivery, and neonatal infection after delivery.<sup>1</sup> CHOP has a 50-60% cure rate, however the addition of rituximab increases success to 82%.<sup>2</sup>

The patient had a successful delivery outcome with careful multidisciplinary planning, despite a complex oncologic course. Given the potential for catastrophic cardiovascular collapse from compression of the mediastinal mass on the heart or airways, particularly with general anesthesia, extracorporeal membrane circulation cannulas were preemptively placed. A carefully dosed neuraxial block allowed surgical anesthesia while minimizing hemodynamic compromise.

## References

- 1) Intern Med. 2019;58:3455-9
- 2) Cureus. 2018;10(2):e2215