

Anesthetic Management of Parturient with Chronic Myeloid Leukemia and Associated Splenomegaly

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BACKGROUND

- Chronic Myeloid leukemia (CML) is a myeloproliferative neoplasm caused by a chromosomal translocation resulting in an abnormal gene BCR:ABL
- This abnormality causes bone marrow to produce abnormal protein, tyrosine kinase, which stimulates cancer cells to proliferate.
- Manifestations of CML include weakness, fatigue, splenomegaly, bone pain, and night sweats.
- Incidence of CML associated with pregnancy is less than 1 case per 100,000.

CASE PRESENTATION

A 27-year-old G5P4004 at 36.1 weeks by estimated delivery date presented to the labor and delivery floor for unscheduled repeat caesarian section (number 5) secondary to oligohydramnios found on biophysical profile (BPP). Pregnancy course was complicated by diagnosis of chronic myeloid leukemia during early second trimester where patient was found to have significant leukocytosis (60k during diagnosis, and 90k at time of hospital admission).

The patient exhibited symptomatic splenomegaly with the spleen measuring 17.3 x 6.9 x 7.1 cm (normal upper limit approximately 12 cm in length). Given splenomegaly and likely placenta accreta from multiple previous cesarean sections, the patient was very high risk for maternal hemorrhage, disseminated intravascular coagulopathy, and poor neonatal outcomes.

REFERENCES

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2. Gangat N, Tefferi A. Myeloproliferative neoplasms and pregnancy: Overview and practice recommendations. Am J Hematol. 2021 Mar 1;96(3):354-366

INTRAOPERATIVE MANAGEMENT

In preparation for cesarean section, 2 large bore peripheral IVs were placed. 4 units of PRBC, 4 units of FFP, and 2 units of platelets were ordered and available on standby. A combined spinal epidural was placed without complication (spinal dose consisted of 1.6mL of bupivacaine 0.75%/Dextrose 2mL, 0.15mg preservative-free morphine, 10mcg fentanyl, and 0.1mg epinephrine).

After uterine incision, a Kiwi vacuum was used to deliver the neonatal head to minimize the intra-abdominal fundal pressure applied in order to decrease risk of splenic rupture. The remainder of the C-section was performed without complication with a quantitative blood loss of 663mL. Mother and baby had an uneventful postpartum course and were discharged from the hospital on post-op day 3.

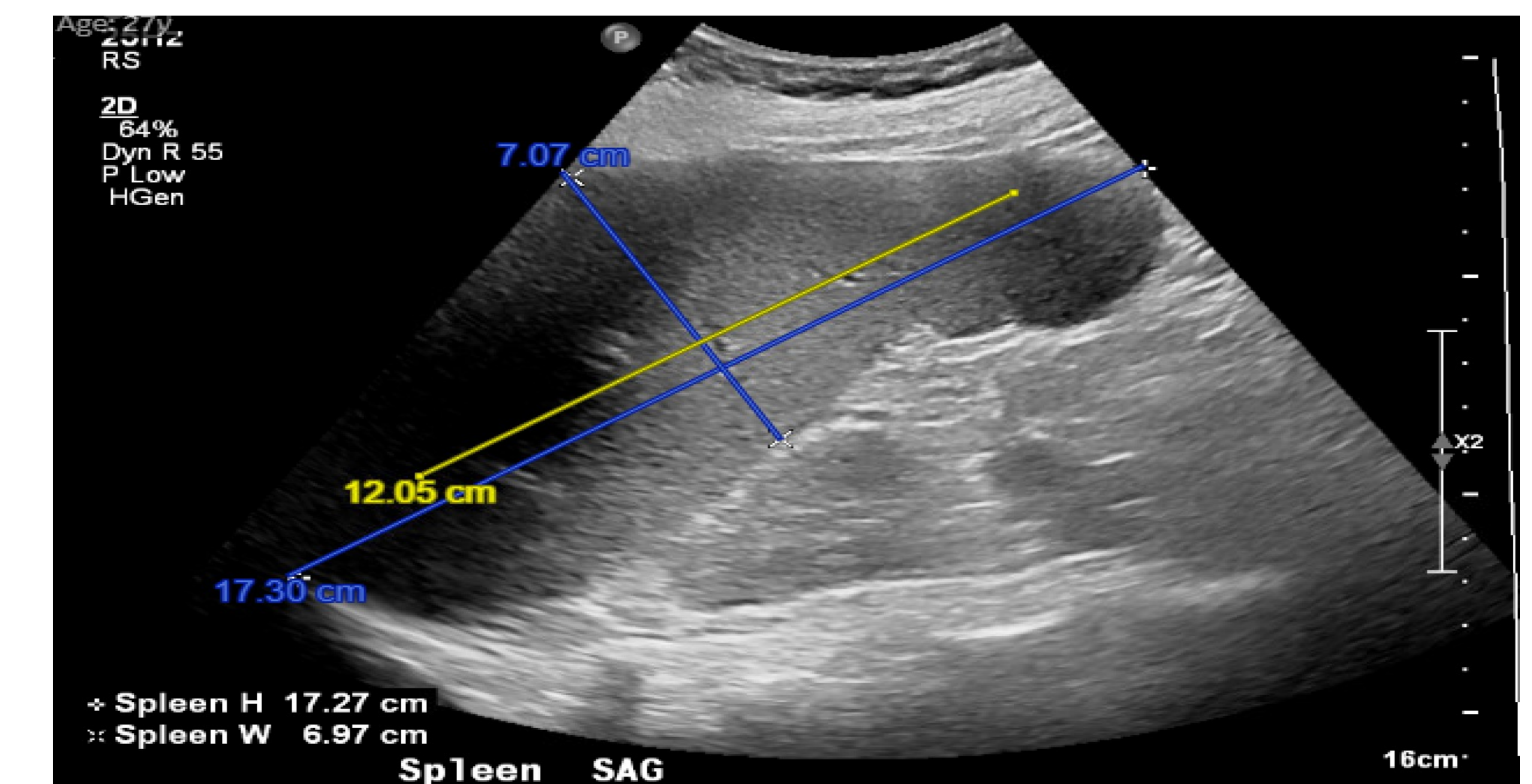


Figure 3. Right upper quadrant abdominal ultrasound of patient demonstrating marked splenomegaly

DISCUSSION

Myeloproliferative neoplasms pose various unique challenges to both the mother and fetus. At time of diagnosis, there are 3 main aspects to consider: disease phase, disease burden, and time to delivery. Though pregnancy itself does not alter the disease course of CML, delay of treatment on long-term disease control is uncertain. Though the mainstay of treatment is tyrosine kinase inhibitors, they should be avoided during pregnancy, particularly during the first trimester. IFN-alpha is the only therapeutic option that exhibits anticancer properties and is safe to use throughout pregnancy.

Additionally, given associated splenomegaly and multiple prior c-sections, this patient was at very high risk for intraoperative bleeding. Multidisciplinary meetings between obstetrics, anesthesiology, oncology, and nursing are essential for perioperative planning and risk mitigation.

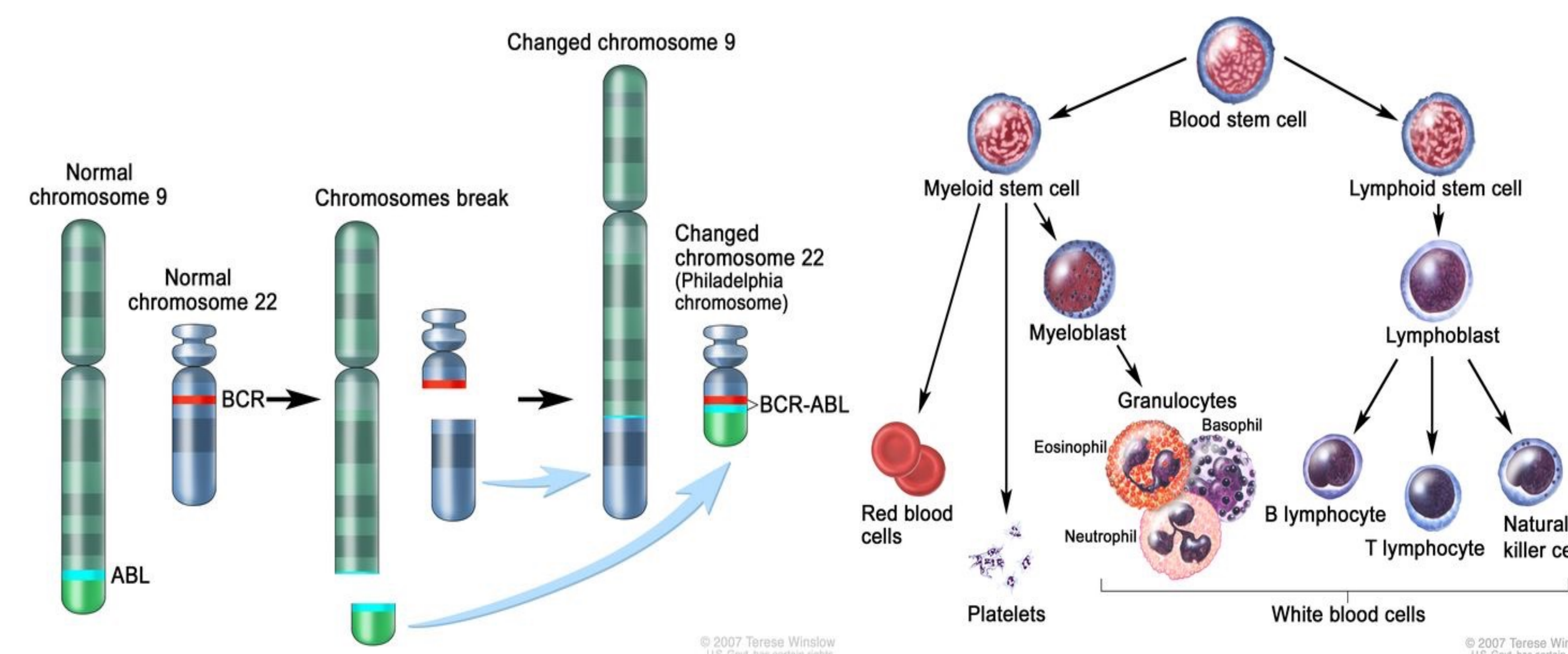


Figure 1. Translocation of genetic material between chromosome 9 and 22 t(9;22)
Figure 2. Blood cell development, in CML abnormal proliferation of granulocytes occur