Case report

A case report of acute leukemia and pregnancy

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Abstract: *We are presenting a case of a pregnant woman who was diagnosed to have acute leukemia at 20 weeks of gestation. She was started in multi-agent chemotherapy and was delivered at 28 weeks and 4 days by caesarian section due to severe intrauterine growth restriction. A live male infant was born with apgar score (appearance, pulse, gesture, activity and rate of breathing) 6 at 1 minute and 8 at 5 minutes and excellent progress the following days. She recovered from the caesarian section uneventfully and is currently following her treatment. Hippokratia 2006; 10(2): 88-89*

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Case report

A 23 year old lady, primigravida, was transferred to the General Prefectural Hospital of Serres on the 02/04/2005. She was 20 weeks pregnant with last menstrual period: 17/11/2004 and uneventful pregnancy so far. She had a past medical history of rheumatoid arthritis and treatment with methotraxate when she was 17 years old. On admition, her symptoms were nose bleeding and left upper quadrant abdominal pain, having started three days ago. Her blood revealed Ht: 23.2% Hb: 7.8% g/dl Platelets:17,000 mm ^{3} and WBC: 14,000 mm ^{3}(neutrophils 4%, lymphocytes 19% and blast cells 72%). On clinical examination and abdominal palpation she had hepatomegaly and splenomegaly. According to the measurements obtained by the ultrasound examination, the fetal growth agreed with gestation age and fetal heart was positive. A single live male fetus was found. The patient was transfused with two units of packed red cells and two units of platelets and was transferred by ambulance to our clinic.

On admition a new blood test revealed blasts 81%, neutrophills 6,1% and lymphocytes 10%, CA 15-5:7.9 CA 125:33.5 CA 19-9: 3.63 CEA:1.01. The diagnosis of acute leukemia was made, after consultation from the hematology department. An abdominal ultrasound revealed normal liver structures, hepatomegaly, splenomegaly, normal kidneys and bladder. The diagnosis of acute B-LL was confirmed by the hematologists, from the immunophenotype of peripheral blood blasts and the myelogram.

After liaison with the hematologists and discussion with the patient, we have decided to continue with pregnancy and to proceed to chemotherapy in the same time. In order to avoid any toxic effects to the fetus we have decided to use the UCAL protocol of chemotherapy (danuoblastine, oncovin, vincristine). She received four cycles of danuoblastina, oncovin and medrol tablets 16mg T.I.D (three times daily), with one day administration of danuoblastina and the following day oncovin. We have also started her on ciproxin 500mg and sporanox sir twice daily. The treatment lasted from the 21/04/2005 to the 10/05/2005. On the 21/04/2005 we performed a detailed ultrasound to the fetus which revealed no structural abnormalities, normal liquor volumes, normal growth at 21 weeks and 5 days and breech presentation. Initial investigations from the hematologists were satisfactory, but her blood results and myelogram showed relapse on the 17/05/2005. In the meantime due to abnormal glucose tolerance test she was started on diet of 2000 calories per day by the diabetologist.

Due to the relapse and after discussion with the mother the decision was made to begin now the CY-VAD protocol (cyclophosphamide , vincristine, adriablastina and decadron) and to continue after delivery with subchorionic administration of methotraxate + cytocine- arabinose+ solucortef. There was good response to the treatment. On the 05/05/2005 we performed an ultrasound. The findings were live infant of 24 weeks and 3 days, normal growth and liquor volumes and positive EDF (end diastolic flow). Two weeks later, due to poorly controlled diabetes, she was started on actrapid+ protaphane by the diabetologist and the glucose levels were satisfactorly controlled. A gestational ultrasound on the same day showed normal growth at 27 weeks, estimated fetal weight 1235 grs, cephalic presentation, liquor within normal limits but abnormal doppler measurements. There was negative E.D.F. and P.I (pulsatility index) 1.716 for the umbilical artery, thoracic aortal P.I.: 2.705 and M.C.A.(mid-cerebellar artery) P.I: 1.705. There was obvious increased resistance in feto-placental and arteriovenous circulation. On the 24/05/2005 the ultrasound findings were the same and we have decided to reassess the patient again in 7 days. On the 31/05/2005 she was 28 weeks and the

A.F.I. (amniotic fluid index) was 8, umbilical P.I: 1.588, thoracic aorta P.I: 1.85 and M.C.A. P.I.: 1.075.

We continued observations by performing CTG'S three times daily. On the 04/06/2005 she was 28 weeks and 4 days. Her CTG'S were abnormal with absent variability in three occasions. We have decided to proceed to emergency caesarian section. A live male infant was delivered, with apgar score 6 in 1 minute and 8 in 5 minutes, weighting 1070grs. The infant was transferred to the neonatal unit and had excellent recovery and progress the following days. The placenta was preserved for stem cells recovery. The mother pre-operatively had Hb: 11.8 PLT: 96,000 and WBC: 2,700 and was transfused in theatre with two units of red packed cells and 10 units of platelets. Her recovery from the operation was uneventful and she is currently following her treatment in the hematology unit.

Discussion

The combination of acute leukemia and pregnancy is infrequent. It is estimated to occur in less than 1 in 75000 pregnancies. Acute leukemia represents about 90% of leukemia coexisting with pregnancy. Acute myeloid leukemia accounts for about 60% and acute lymphoblastic leukemia for about 30% of cases. More than 75% of the cases are diagnosed after the first trimester[1,2].

In more recent times there is an improved survival rate with these malignancies, and in three fourths of women who develop acute leukemia during pregnancy, remission can usually be induced after chemotherapy. Thus, maternal and fetal outcomes have improved substantially in the recent years. There are numerous reports of successful pregnancies in patients aggressively treated with combination chemotherapy for acute leukemia[3,4]. Acute leukemia and it's therapy are associated with an increase in stillbirths about 15%, prematurity 50%, and growth restriction[5]. No serious long-term effects of in utero exposure to chemotherapy have been reported.[6] Despite being improved, perinatal outcomes are generally poor for leukemic women.

There is no evidence that pregnancy has a deleterious effect on leukemia, so in these cases termination is not recommended to improve the prognosis, but it is a consideration in early pregnancy to avoid teratogenesis from chemotherapy. In general, multi-agent chemotherapy is given as soon as the diagnosis of leukemia is established, even if it is in the first trimester[7].

Significant complications in pregnancy that include infection and hemorrhage should be anticipated at the time of delivery in women with active disease. Manifestations include anemia, neutropenia and thrombocytopenia. Vaginal delivery is preferable, and caesarian section is reserved for obstetrical indications only.

References

1. Caligiuri MA, Mayer RJ. Pregnancy and leukemia. Semin Oncol 1989;16:338
2. Gabbe G, Niebyl JR., Simpson JL. Normal and problem pregnancies. Neoplastic diseases 2002;57:1286
3. Reynoso EE, Shepherd FA, Messner HA, Farquharson HA, Garvey MB, Baker MA. Acute leukemia during pregnancy. The Toronto leukemia study group experience with long-term follow up of children exposed in utero to chemotherapeutic agents. J Clin.Oncol 1987;5:1098
4. Cunningham FG, MacDonald PC, Gant NF et al. Williams Obstetrics. Neoplastic Diseases 2001;57:1286
5. Antoneli NM, Dotters DJ, Katz VL, Kuller JA. Cancer in pregnancy: a review of the literature. Part II Obstet Gynecol Surv 1996;51:135
6. Aviles A, Diaz-Maqueo JC, Tavalera A, et al. Growth and development of children and mothers trated with chemotherapy during pregnancy; current status of 43 children. Am J Hematol 1991;36:243
7. Fassas A, Kartalis G, Klearhou N, Tsatalas K, Sinacos Z, Mantalenakis S. Chemotherapy for acute leukemia during pregnancy. Five case reports. Nouv Rev Fr Hematol 1984;26:19-24