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Myocardial Infarction in Pregnancy

A case report and review of the literature

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ABSTRACT

A case of acute myocardial infarction (AMI) in late pregnancy is reported. The prognosis for pregnant women with AMI and the mode of delivery is discussed. A woman with recent myocardial infarction does not seem to benefit from parturition by Cesarean section but should rather have an assisted vaginal delivery with regional anesthesia.

INTRODUCTION

Acute myocardial infarction (AMI) is a rare and serious complication in pregnancy. This condition occurs in about 1/10,000 deliveries (2), although, at least in Scandinavia, the figure seems to be lower. However, with the trend toward childbearing later in life, the incidence of AMI is expected to increase (3, 7). According to the literature, AMI in pregnancy is fatal for the mother in about one-third of the cases (3). This figure has not diminished in the course of time despite significant advances in intensive care (3).

CASE REPORT

A 40 year old gravida V, para III was referred to the University Hospital, Uppsala, Sweden at week 33 of pregnancy because of AMI.

Hereditary factors related to the risk for AMI could not be found, but it appeared that the patient had been smoking about 20 cigarettes per day for the last 20 years. Furthermore, she had been suffering from pain in the neck with radiation to both arms for periods during the last four years. These pains had been

considered to result from disc degeneration in the cervical spine.

Obstetrical history included an early spontaneous abortion and three normal pregnancies with uncomplicated vaginal deliveries of infants weighing 2300 - 2800 g at 34 - 36 weeks of gestation.

During the last pregnancy she described occasional pains in the chest with radiation to both arms with onset during the early second trimester. Her complaints were interpreted as related to disc degenerations in the cervical spine. At week 33 of pregnancy, however, the pain became intense and persistent and she was examined at the emergency unit of a minor hospital about 200 km from Uppsala. Electrocardiography (ECG) showed signs of AMI and she was immediately transferred to the University Hospital.

Upon arrival at the coronary care unit the ECG diagnosis of a transmural diaphragmal infarction was confirmed. Initially signs of left ventricular failure, such as an audible third heart sound and basal vâles, were present. Chest X-ray also showed widened pulmonary vessels and interstitial fluid.

After administration of furosemide the pleural effusions disappeared. The third heart sound persisted during the observation period and echocardiography confirmed the diaphragmal localisation of the infarction. The lesion was relatively large with an S-ASAT-max of 5.6 µkat/l. The mobilization period was uneventful with no arrhythmias except during uterine contractions.

Fetal growth following the infarction was considered normal by ultrasound measures of the biparietal and abdominal diameters every second week. Fetal well-being was ensured by frequent cardiotocographic recordings as the pregnancy proceeded. At 40 weeks of gestation cervical conditions were excellent for labor induction by amniotomy. Labor was induced and optimal surveillance and access to experts of cardiology and anesthesiology at delivery were at hand.

Following artificial rupture of the membranes labor was enhanced by intravenous oxytocin infusion. Pain relief was obtained by epidural anesthesia with a single dose of 6 ml bupivacaine 0.25% 3.5 h after amniotomy. The first stage of labor lasted 4.5 h and after 10 min of second stage labor, a 2910 g male infant with normal Apgar scores was delivered by gentle pushing. Neither vacuum extraction or outlet forceps had to be used.

The postpartum course was uncomplicated initially, but in the fourth night after delivery, the patient awoke because of difficulties to breathe. Pulmonary X-ray the same night showed some pleural fluid but neither the pulmonary scintigram nor the ECG showed any signs of pulmonary emboli. The symptoms as well as the pleural exudate disappeared rapidly after treatment with diuretics. Both mother and infant were discharged from the hospital one week after delivery.

DISCUSSION

The prognosis for the mother depends on the length of gestation at the time of AMI. Maternal mortality is highest when the cardiac insult occurs in late pregnancy (3). Additionally to this, delivery within two weeks of AMI is associated with greatly increased mortality figures (3). The fetal and neonatal mortality is almost solely depending on maternal outcome. The survival rate of pregnant women above the age of 35 years is lower than the rate for younger women (2).

In pregnant women with a recent myocardial infarction the mode of delivery is the most interesting issue from an obstetrical point of view. In pregnancy the cardiac output and plasma volume increase about 50% until 28 to 32 weeks of gestation and is then maintained at this level until term (6). The increased cardio-vascular load in late pregnancy and during delivery might seriously compromise women with ischemic heart disease. All efforts should therefore be made to limit myocardial oxygen demand during parturition (3).

Delivery by elective Cesarean section eliminates the stress of uterine contractions and ensures the presence of experts in cardiology and anesthesiology. However, the elective termination of pregnancy will reduce the recovery period after the initial infarction. Major abdominal surgery also provokes considerable stress and increased cardiovascular and metabolic demands during the operation and subsequent postoperative period. In a recent review of 68 women with a myocardial infarction during pregnancy Hankins et al. (3) showed a maternal mortality of 23 % for women delivred by Cesarean section, but for those delivered vaginally the rate was only 14 %. In three recent case reports (1, 5, 8) the deliveries were managed vaginally with a favorable outcome to both mother and infant. Where vaginal delivery had been chosen, regional anesthesia was generally recommended in order to reduce

the stress of pain in labor (1, 3) and the second stage of labor was often assisted by means of vacuum extraction or forceps (4, 8).

Thus, according to the current concept in medical literature a woman with a recent myocardial infarction does not seem to benefit from parturition by Cesarean section. In the absence of a clear obstetrical indication for an abdominal delivery the woman should have an assisted vaginal delivery with regional anesthesia rather than an elective Cesarean section.

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