Electrical shock sustained in pregnancy followed by placental abruption

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Summary: The case of a pregnant woman suffering a large placental abruption following electric shock at 32 weeks' gestation is reported. No other such cases have been published in the literature.

Introduction

Electrical accidents in pregnancy are fortunately infrequent and therefore the consequences to the fetus are not well documented. This paper records the pregnancy outcome of a 32 week pregnant woman who suffered an electric shock at home. Literature review suggests a poor fetal outcome following electric shock in pregnancy and recommends careful follow-up of these pregnant women.

Case report

A 28 year old pregnant woman was seen in Casualty having sustained an electric shock whilst mending the wiring of the plug of her iron at home that afternoon. She had been 'thrown across the room' approximately 5 metres. She had suffered no loss of consciousness. She had felt 'tingly' for several minutes afterwards.

She was 32 weeks pregnant by dates and by early ultrasound scan in her second pregnancy. Her antenatal care had been uneventful and she had been fit and well. Her first pregnancy in 1988 had resulted in the normal delivery of a 3.65 kg baby girl.

In the Accident and Emergency Department the patient was found to have suffered no serious injury. Her electrocardiogram and skull X-ray were normal. The uterus was soft and the fetal heart rate was satisfactory at 130 beats per minute. She was discharged home a few hours later.

The next morning the patient was admitted to the Labour Ward complaining of severe abdominal pain. There had been no vaginal bleeding. Reduced fetal movement had been noted earlier in the day. On examination the patient appeared distressed,

her pulse rate was 85 beats per minute and her blood pressure was 105/75 mmHg. The uterus was hard and tender and its size was compatible with that of a 32 week pregnancy. The fetal heart was detected with a Doppler ultrasound machine and found to be 70 beats per minute. Amniotomy resulted in clear liquor. A fetal scalp electrode was applied and this confirmed a fetal bradycardia, the fetal heart rate being 48 beats per minute.

An emergency Caesarean section was performed. A large retroplacental clot was found at operation. A baby boy weighing 2.24 kg was delivered. No apex beat was palpable at delivery and the baby's Apgar score was 0 at 9 minutes. Despite resuscitation the baby died 24 hours following delivery. No burn marks were noted on the baby's skin. Post-mortem was refused by the parents. Postoperatively the mother required a transfusion of 4 units of blood. She made a good recovery and was discharged 5 days later.

Discussion

The passage of electric current through the human body may cause muscular contraction, respiratory paralysis, cardiac arrhythmias and tissue burns. In a pregnant woman the hand-to-foot current pathway also includes the uterus. Because amniotic fluid and the uteroplacental vessels have a relatively low electrical resistance, the fetus is also at risk from electrical injury.

Previous reports suggest that acute fetal problems resulting from electric shock in pregnancy include spontaneous abortion,^{1,2} decreased fetal movements, ominous fetal cardiac patterns and unexplained intrauterine death.³ Long term effects include intrauterine growth retardation and/or oligohydramnios.³⁻⁵

This is the first report where an electrical injury in pregnancy has been followed within 24 hours by a large placental abruption and consequent fetal

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demise. In Lieberman's study⁵ of pregnant women who had suffered an electric injury in pregnancy the fetus, placenta and cord were carefully examined in all cases following delivery and no specific clinical or pathological sign of fetoplacental damage could be identified.

Once again it is recommended that pregnant women who suffer from an electric shock in

pregnancy, however minor, need careful medical supervision.

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