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Scolicidal agents in hydatid cyst surgery

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Surgical operation is the treatment of choice for patients with hydatid cyst as chemotherapy is still controversial. Inoculation of a scolicidal agent into the cavity of hydatid cyst to reduce the risk of spillage of viable protoscolices is a major part of the surgical technique. Although numerous scolicidal agents have been used for many years, good evidence for their efficacy in vivo is lacking. Therefore, the effectiveness of some of these agents needs to be tested.

Fresh, fertile hydatid cysts from the liver were obtained shortly after surgical removal in Basrah General Hospital, Basrah, Iraq. The material was allowed to settle in a sterile bottle, and the supernatant was removed. The viability of protoscolices was determined by flame cell activity and vital staining with 1% eosin. Viable scolices show flame cell activity and do not take up the dye.¹ The test was carried out on 5 samples. The scolicidal agents examined were hypertonic solution 30%, normal saline 0.9%, betadine, ethyl alcohol 70% and 95%. Two ml of each scolicidal were placed in a test tubes. A drop of protoscolex rich sediment was added to each tube and was mixed gently. Following 5, 10 and 30 minutes of exposure, the viability of the protoscolices was determined microscopically by assessing flame cell activity and lack of vital staining with 1% eosin.

Betadine, hypertonic solution 30% and ethyl alcohol 95% were effective in killing the protoscolices within 5-10 minutes time. In contrast, saline solution 0.9%, and ethyl alcohol 70% could not show any lethal effect on the protoscolices even after 30 minutes time. Cyst fluid contains thousands of protoscolices and each one has the potential to grow into a new hydatid cyst. Thus, it has been traditional to inject scolicidal agents into the unopened hydatid cyst due to the risk of spillage into the peritoneal cavity leading to recurrent disease. Hypertonic solutions 30% have become the scolicidal agents of choice over the past years. Although Besim² demonstrated that 5% saline have no effect on scolices, many surgeons recommended the use of 3% saline.^{3,4} Our findings prove that there is no scolicidal effect (100%) can be shown with 20% saline at 5 minutes.² But, it should not be used in patients who have cysts connecting with the biliary tree due to the danger of sclerosing cholangitis.⁵

Betadine is an effective scolicidal agent, as demonstrated in this study, but polyvinylpyrrolidone storage disease, renal shut down, sterile peritonitis and sclerosing serositis are the associated complications and its use is restricted to preoperative local antisepsis of intact adult skin.⁶ Ethyl alcohol is an effective agent at a concentration of 95%. Unfortunately, it can cause caustic damage to the epithelium of communicating bile ducts leading to sclerosing cholangitis and it is strongly concentration dependent,^{2,3,6} as observed in this study. Therefore, the surgeon in practice in our hospitals aspirates the cyst fluid first. If the aspirate is clear, then they would use any effective scolicidal agents without hazard. However, if the aspirate is yellow in color it means there is a biliary communication. So, the risk of sclerosing cholangitis may be the problem of using a certain agent. Therefore, total evacuation and prevention of any contact of germinative membrane with the peritoneal surface are essential as the germinative membrane can contain viable protoscolices despite proper cyst fluid inactivation.

In conclusion, the risk of dissemination of the cyst contents can be avoided by injecting a potent scolicidal agent, which is an important step in hydatid cyst surgery. The best scolicidal agent to be used is betadine. However, experiment in vitro and in vivo results need to be studied further.

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Pregnant women with type 1 diabetes mellitus treated by glargine insulin

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Pregestational diabetes mellitus complicates approximately 0.2-0.5% of pregnancies. Type 1 diabetes was 35% of pregestational diabetic women and 65% was type 2 diabetes mellitus. Pregnancy in diabetes is associated with an increase in risk to both the fetus and the mother. The risk of complications increased in poor glycemic control and decreased in nearly normal glucose levels. Tight control of blood glucose is mandatory in both type 1 and type 2 during pregnancy. The goals of glycemic control in type 1 diabetes sometimes very difficult especially in brittle's diabetes mellitus. With the use of long acting insulin, such as glargine insulin in addition of premeals, short acting insulin makes the control easier in such patients. There is no clear safety of glargine insulin in pregnancy. With very well-known hazards of high blood glucose during pregnancy without known hazards glargine insulin, we decided to use it in difficult cases of type 1 diabetes.

Type 1 diabetes treated by glargine insulin and became pregnant advised either to continue or to change to other insulin. Pregnant women with uncontrolled type 1 diabetes mellitus treated by insulin other than glargine insulin were also advised

to be treated by glargine insulin. The safety of the glargine insulin and the hazards of high glucose during pregnancy were discussed with the patients. Glargine insulin was initiated or continued if the patients agreed and signed the consent forms. The total daily insulin doses were calculated according to the body built (0.7 unit/kg) and 50% of it was glargine insulin given once daily either afternoon or in the evening. The other daily dose was given as a short acting insulin (regular insulin) and was divided into 3 premeals doses. The doses of the glargine insulin and short acting insulin were adjusted according to the blood glucose levels. We aimed to lower the fasting blood glucose less than 100 mg/dl and postprandial less than 130 mg/dl. They were followed in monthly bases during the pregnancy in our clinic and followed by the obstetrician. They had all the antenatal investigation and follow up. Home glucose monitoring pre and post meals were carried out by the patients and reviewed in each visits. Glycosylated hemoglobin was carried out in the first month of pregnancy and every 3 months thereafter. Fetal monitoring by ultrasound was carried out in the first trimester and repeated every 3 months thereafter. The fetal sizes, heart pulses, and any abnormalities were reported by ultrasound. The methods of the delivery, fetal apgar scores and fetal sizes were noted at deliveries.

Eleven patients with type 1 diabetes became pregnant and were treated by glargine insulin. All went through pregnancy without any problems except for one abortion. The dose of glargine insulin ranged between 30-80 units per day. The glycosylated hemoglobin in the first trimester was ranging from 7.8-12.4% (the mean was 9.93%). At the end of the pregnancy, the glycosylated hemoglobin reduced to 5.9-7.4% (the mean 6.54%). All antenatal visits revealed no abnormalities. Fetal heart and sizes were normal through all pregnancy. Mild hypoglycemic events reported 3 times in different patients and managed without any complications. Normal spontaneous vaginal delivery was the way of delivery in 7 patients and 3 by cesarean section due to poor progression and fetal distress. All patients were informed to discontinued the glargine insulin during delivery and treated only by short acting insulin. All fetuses were healthy (4 boys and 6 girls). There was no congenital anomalies found in all of them. Their sizes were ranging between 2.8-4.34 kg (mean 3.26%) (Table 1). All patients except one were discharged from the hospital after 24 hours of delivery.

Type 1 diabetes mellitus is a common disease in our country. Women with type 1 diabetes has the capability to conceive and high blood glucose has many drawback effects on the mother and the fetus.