

Indication of myomectomy during pregnancy from Doppler ultrasonography

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Summary

Myomas during pregnancy must be evaluated carefully, especially in relation to possible premature delivery or spontaneous miscarriage. We wanted to find out whether the addition of Doppler assessment could help in the management of these cases. We found that from all cases of myomas during pregnancy, the most common association with impairment of the fetoplacental unit flow was found in the cases with submucous myomas and the subgroup of those with intramural myomas which show etc. growth during pregnancy. However myomectomy is generally not considered to be indicated to prevent pregnancy complications except for women with a history of myoma-related complications. In pregnancies with myomas, preserving the pregnancy is one goal but different risk factors have to be taken into account at the same time.

Key words: Myoma; Pregnancy; Doppler.

Introduction

Myomas (leiomyomas or fibroids), defined as benign tumors of the flat muscular tissue and connective tissue of the uterus, are found in one of 150 to 300 pregnancies and are more common in women in their late reproductive period [1]. Subserous and intramural myomas are the most common, while submucosal myomas are rarer [2]. Myomas can cause sterility and ectopic pregnancies [3]. If pregnancy occurs, myomas can be associated with an irregular position of the fetus and with premature delivery or spontaneous miscarriage. During the birth process myomas can lead to weak, irregular contractions and protracted delivery [4]. Also a more frequent occurrence of marginal placenta and placenta previa is found. In the postpartum period the expulsion of the placenta can be disturbed which causes a prolonged fourth stage of labor often with atonic hemorrhage as well as an adherent placenta [5]. Fibromyomas, which are localized in the isthmus part of the uterus and cervix of the uterus, called myoma praevium, can prohibit vaginal delivery. Myomas in puerperium can lead to necrosis and secondary infection as well as thrombosis and embolism [2].

In pregnancies, especially with pedunculated myomas, also torsion and degeneration can occur, sometimes requiring early surgery. So far, myomectomy during pregnancy has been limited usually to those tumors with stalks which can be easily clamped and ligated. In other situations, however, hemorrhage has been so profuse that the need for hysterectomy becomes obvious [6].

prediction of possible specific risks such as early contractions and premature delivery or spontaneous miscarriage in pregnancies with myomas. We also wanted to find out whether by following the circulation through the myomas it might be possible to predict necrotic or even malignant degeneration.

Patients and Methods

In pregnancies affected by myomas we measured the circulation through the uterus at the top of the myoma at the cam of the myoma. Doppler flow rates were assessed from the first trimester of pregnancy in the uterus, the uterine arteries (radial and spiral arteries) and in the blood vessels that feed the myoma and the myomatous cam circulation.

The patients were divided into three groups depending on the location of the myoma, i.e., group A: submucosal, group B: intramural and group C: subserous myomas. Doppler flow rates in the vessels mentioned above were followed throughout the pregnancies (15 in each group). Extracted myomas were histopathologically analyzed and pregnancy outcomes were recorded over the last four years.

We evaluated pregnancies with pre-existing myomas as well as those in which the myomas were first recognized during the course of pregnancy. We did not follow the group of patients who had myomas with a stalk because in those cases usually myomectomies were performed to prevent necrosis, according to our protocol.

All patients were primiparous, with a wide age range in maternal age from 23 to 35 years without other burdening factors in relation to pregnancy and general health condition.

Results

In the 15 cases with submucosal myomas (group A) already present in the first trimester there was an enlarged resistance index (0.80-0.95) in the spiral and radial arteries indicating an evidently weaker blood flow through the

Objective of the study

The idea of our work was to use Doppler flow analysis as an additional parameter to the standard evaluation for

uterus. In these cases 1500 IU Pregnil (human chorionic gonatropin) was given i.m. together with 100 mg of aspirin daily leading to a decrease in the resistance index of 0.60-0.75. Despite this therapy in all cases, we observed three cases of intrauterine growth retardation (IUGR), with an average increased resistance index of 0.78 before delivery. These three patients needed surgically assisted deliveries due to fetoplacental insufficiency which developed during initiation of vaginal delivery.

In the group of pregnant women with an intramural location of myoma (group B), flow Doppler analysis was in the normal range. In regard to contractions in all those 15 women tocolytic therapy was indicated, but there was no IUGR. No pregnancy in this group had to be ended surgically and fetal body weights were adequate for gestational age. In the myomatous cam flow analysis a normal decrease of the resistance index was observed in nine of these cases with progressing pregnancy.

In six out of the 15 cases with intramural myomas, however, the myomas showed a significant decrease (to 0.35) in resistance index (34%). Considering these Doppler flow changes (resistance index 0.35 to 0.38) and a positive family history of malignant uterus alterations in five of the patients we decided to perform surgery during pregnancy. The myomectomies in these patients were in the second trimester with no complications thereafter. In three of these women some signs of sarcomatous degeneration were found on histology of the excised myomas.

In the third group of patients (group C) with subserous myomas, there was no disturbance of the fetoplacental unit, and the maintenance of the resistance index from 0.68-0.70 as well as the other clinical parameters did not indicate any need to start therapy. The uterine arteries showed the classical physiological conversion pattern in this group.

Discussion and Conclusions

Myomas during pregnancy must be carefully evaluated, especially in relation to possible premature delivery or spontaneous miscarriage. Previous studies have shown that compared to controls, women with myomas have an Odds Ratio for abruptio placentae of 3.87, for dysfunctional labor of 1.85 and cesarean section of 6.39, and that one-third of the women experience growth of the myomas during pregnancy [7-9]. We wanted to find out whether the addition of Doppler assessment could help in the management of these cases. We found that from all cases of myomas during pregnancy, the most common association with impairment of fetoplacental unit flow was found in the cases with submucous myomas and the subgroup of those with intramural myomas which showed growth during pregnancy.

In the group of intramural myomas, an increase in contractions has been stated in the literature [5], but our data for the first time indicated a disturbance of vascularisation of the myomatic cam in these cases. Therefore we think that the addition of Doppler evaluation might help to identify those cases which require surgery in pregnancy.

We felt that therapy was indicated during pregnancy in the cases with disturbances, i.e., tocolysis and aspirin treatment in those cases with premature contractions, and in agreement with the patients we even undertook the surgical risk of removing the myoma during pregnancy in those cases with strong myoma growth and a sharp drop in resistance index, probably indicative of some degree of necrosis (0.35 to 0.38 during the second trimester). It is noteworthy that in three of these cases signs of sarcomas of the uterus were found at histology but it is unclear what the further course would have been without surgery.

Although myomectomy is generally not considered to be indicated to prevent pregnancy complications except for women with a history of myoma-related complications [10] we wonder whether the results of our observational study do not argue in favor of developing further criteria for intervention, e.g., Doppler flow parameters. The question of whether Doppler flow of myomas during pregnancy is to be recommended to predict obstetric risks all the way to sarcomatous degeneration of tumors is still difficult to answer. Nonetheless the predictive value should be further established for factors such as necrosis, torsion, spontaneous miscarriage, contractions and premature delivery. In pregnancies with myomas, preserving the pregnancy is one goal but different risk factors have to be taken into account at the same time.

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