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Fetal activity in pregnancies complicated by rheumatic heart disease

Alex Simon¹, Eliahu Sadovsky¹, Yeshayahu Aboulafia², Gonen Ohel¹, and Gershon Zajicek³

¹Department of Obstetrics and Gynecology, Hadassah University Hospital,

²Department of Obstetrics and Gynecology, Shaare Zedek Hospital, and

³Hubert H. Humphrey Center for Experimental Medicine and Cancer Research, Hadassah University and Medical School, Jerusalem, Israel

1 Introduction

The incidence of rheumatic heart disease complicating pregnancy has been decreased within the last three decades [3, 11]. Nevertheless, individual patients in pregnancy, especially those suffering from severe valvular changes, may present difficult clinical challenges. Similar to other high risk pregnancies, it is felt that monitoring of these cases should include fetal movement (FM) assessment, in addition to the non stress test and oxytocin challenge test [8, 9].

It has previously been shown that fetal activity is an expression of fetal well being [1, 5, 6, 8, 9, 10]. While the existence of normal FM is reassuring, reduced activity signifies fetal distress [1, 4, 6, 7, 9, 10]. In cases of chronic fetal distress a decrease in FM, while fetal heart beats were still audible, was observed to precede fetal death in utero [8, 9]. Pregnancies associated with cardiac disease, especially when congestive heart failure supervenes, may be complicated by the reduction of placental perfusion and thus a state of fetal deprivation. Our aim in the present study was to evaluate one of the factors associated with fetal well being, namely fetal activity. Fetal movements were assessed in mild and severe cases of rheumatic heart disease and both groups were compared to normal controls.

Curriculum vitae

ALEX SIMON was born in 1953. He studied at the Medical School of Hadassah University Medical Center in Jerusalem and graduated from there in 1981. Since January 1982 he is resident in the Gynecology and Obstetrics Department of Hadassah University Medical Center, Jerusalem.



2 Materials and methods

The study group population consisted of 41 patients suffering from rheumatic heart disease and admitted to the high risk pregnancy unit at Hadassah University Hospital. They were divided into two groups of mild and more severe cases using the classification of functional capacity as suggested by the New York Heart Association [2]. Group one consisted of 36 patients in functional capacity class II. In group two there were five patients with severe disease classified in functional capacity class III and IV.

Each patient was instructed to assess and record her FM for 30 minutes three times a day,

while lying in bed on her left side. If there were less than three FM per half hour, recording was extended to one, two or more hours per day. The number of FM was calculated for 12 hours, thus obtaining the daily fetal movement recording (DFMR). For each woman the weekly average DFMR was calculated and from this the weekly mean DFMR was calculated for each study group. One hundred and twenty women with uncomplicated pregnancies, similarly counted fetal movements, were served as controls. The Student t-test was used for statistical analysis.

3 Results

The weekly mean of DFMR in the mild and severe groups of rheumatic heart disease are shown in figure 1. The 36 mild cases had fetal activity similar to that of the controls. The five severe cases had decreased fetal activity throughout pregnancy, which was statistically significant at 29 to 32 weeks of gestation. Three cases with severe cardiac disease had decreased FM on admission to hospital and return to normal fetal activity within several weeks. The increased fetal activity has paralleled the clinical improvement in the cardiac state of these patients. Figure 2 demonstrates the FM chart of one of these three cases. This patient was admitted to the hospital at her 28th week of

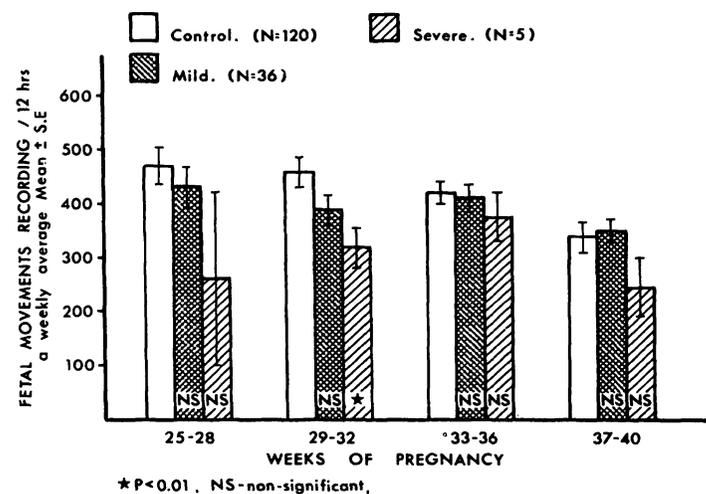


Figure 1. The weekly mean DFMR in mild and severe rheumatic heart disease according to gestational age as compared to normal pregnancy.

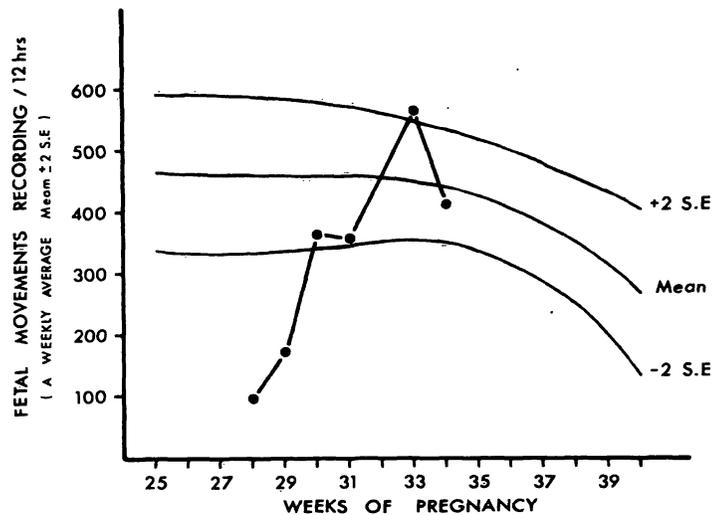


Figure 2. The weekly average of DFMR according to gestational age in a severe case of rheumatic heart disease as related to the normal curve.

gestation. She had congestive heart failure manifested by pulmonary edema, oliguria and cyanosis. Fetal activity was low at first, but improved subsequent to the general clinical improvement of the patient. At 36 weeks, spontaneous labor resulted in normal delivery and good neonatal outcome. Reduction of FM until their cessation did not occur in any of our cases with rheumatic heart disease.

4 Discussion

The present study demonstrates that in mild cases of rheumatic heart disease FM are similar to controls, while in the severe cases FM are decreased. This implies that in the severe cases the failing maternal cardiovascular system may result in decreased uteroplacental flow. This is followed by a state of chronic fetal distress and somewhat reduced fetal activity. Supportive of this notion are the few individual cases which demonstrated increased fetal activity concomitant with improved cardiac performance following bed rest and medical treatment.

Although we have observed changes in mean FM rates in cases of severe rheumatic heart disease, none of the study women had cessation of FM. Accordingly, subsequent fetal outcome was good in all cases. Thus, although the reduc-

ed fetal activity may have physiologic significance, it does not detract from the clinical usefulness of FM counts in the evaluation of fetal wellbeing in cases complicated by rheumatic

heart disease. As was previously described for other high and low risk pregnancies, only cases with marked reduction until cessation of FM are associated with poor fetal outcome [1, 8].

Summary

Severe cardiac disease in pregnancy may be complicated by reduced placental perfusion and subsequent fetal deprivation. In the present study we have evaluated one fetal parameter that may thus be affected, namely fetal activity. The study group included patients with rheumatic heart disease: 36 women with mild and 5 with severe disease. Each counted fetal movements 3 times a day and from this the daily fetal movement recording was calculated. One hundred and twenty women with normal pregnancies were the controls. The mild cases had fetal activity which was similar to that of the con-

trols. The severe cases had reduced fetal activity, which was significant statistically at 29 to 32 weeks of gestation. Three in the severe disease group had marked decrease of fetal movements on admission to hospital. A return to normal fetal activity was observed following improvement of the maternal cardiac state. As was previously suggested for other high and low risk pregnancies, the maternal perception and counting of fetal movements may aid the fetal surveillance of patients with rheumatic heart disease.

Keywords: Fetal activity, fetal movement, rheumatic heart disease.

Zusammenfassung

Fetale Aktivität bei Schwangeren mit rheumatischer Herzerkrankung

Eine schwere kardiale Erkrankung in der Schwangerschaft kann mit einer reduzierten placentaren Perfusion und nachfolgender fetaler Mangelversorgung einhergehen. In der vorliegenden Studie haben wir einen Parameter, nämlich die fetale Aktivität, die bei Mangelversorgung herabgesetzt ist, untersucht. Das Kollektiv bestand aus 36 Frauen mit einer leichten Verlaufsform einer rheumatischen Herzerkrankung und 5 Frauen mit einer schweren Kardiopathie rheumatischer Genese. Die Frauen sollten dreimal pro Tag die Kindsbewegungen zählen. Daraus wurde dann ein Wert der über den Tag verteilten, fetalen Aktivität ermittelt. Als Kontrollgruppe dienten 120 Frauen mit normaler Schwangerschaft.

Bei einer leichten Verlaufsform war die fetale Aktivität gegenüber der Kontrollgruppe nicht herabgesetzt. Bei schwerer Kardiopathie war jedoch die fetale Aktivität reduziert; ein statistisch signifikanter Unterschied bestand in der 29.–32. Schwangerschaftswoche. 3 Frauen mit schwerer Herzerkrankung hatten bei Einweisung in die Klinik deutlich weniger Kindsbewegungen. Nach Therapie und Verbesserung des kardialen Status der Mutter war die fetale Aktivität wieder normal. Wie schon für andere Risikoschwangerschaften vorgeschlagen, ist auch bei Patientinnen mit rheumatischer Herzerkrankung das Registrieren bzw. Zählen der Kindsbewegungen durch die Mutter eine Hilfe bei der Überwachung des fetalen Zustands.

Schlüsselwörter: fetale Aktivität, Kindsbewegungen, rheumatische Herzerkrankung.

Résumé

Activité fœtale au cours des grossesses compliquées d'affections cardiaques rhumatismales

Au cours de la grossesse, les maladies cardiaques graves peuvent être compliquées d'une réduction de la perfusion placentaire et en conséquence, d'une perte pour le fœtus. Dans cette étude, nous avons évalué un paramètre fœtal qui peut de la sorte être affecté à savoir l'activité fœtale. Le groupe étudié comprenait des patientes ayant une affection cardiaque rhumatismale; 35 femmes présentaient une gravité moyenne et 5 sévère. Chaque patiente

comptait les mouvements actifs trois fois par jour et à partir de ces données, on calculait l'enregistrement des mouvements fœtaux quotidiens. Cent vingt femmes ayant une grossesse normale ont servi de contrôle. Les cas de gravité moyenne ont une activité fœtale similaire à celle de témoins. Les cas sévères ont une activité fœtale diminuée, et cela de façon significative sur le plan statistique de 29 à 32 semaines de gestation. Parmi le groupe de gravité sévère, trois femmes ont eu une diminution importante des mouvements actifs lors de

l'admission à l'hôpital. On a observé un retour vers une activité fœtale normale secondaire à l'amélioration de l'état cardiaque maternel. Ainsi que cela l'a été suggéré auparavant pour d'autres grossesses à haut ou à bas

risque la perception maternelle et le comptage des mouvements actifs peuvent aider la surveillance fœtale chez les patientes présentant une affection cardiaque rhumatismale.

Mots-clés: Activité fœtale, maladie cardiaque rhumatismale, mouvements fœtaux.

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Alex Simon
 Department of Obstetrics and Gynecology
 Hadassah University Hospital
 Jerusalem, Israel 91120