

HABILITATION THESIS REVIEWER'S REPORT

Masaryk University

Applicant

MUDr. Hana Jičínská, Ph.D.

Habilitation thesis

First Trimester Screening of Congenital Heart Defects in Pregnancy: More Risk than Benefit?

Reviewer

prof. MUDr. Pavel Calda, CSc.

Reviewer's home unit, institution

Professor of Obstetrics and Gynecology, Charles University, Prague, Czech Republic

Head of the Fetal Medicine Center, First medical faculty, Charles University and General teaching hospital, Prague

Dr. Hana Jičínská has been introduced to me some 20 years ago as an enthusiastic and hardworking individual in the field of prenatal cardiology. I was able to follow her career for last decades and seen her dedication and professional efforts in the field of prenatal cardiology. She is a well-known international expert, very well accepted worldwide, for her knowledge and expertise, but also modest demeanor.

Her thesis consist of commented papers: dr. Jičínská is either the main author of five manuscripts, (in one case, the publication has two main authors who contributed equally), or the co-author significantly contributing to ten manuscripts All manuscripts were published in the final version in the relevant medical journals or books. The impact factor is > 18 in one case, IF > 14 in two cases, IF >5 in three cases, and IF from 1.43 to 4.7 in four cases.

Dr Jičínská summarizes, that neonates born with critical CHDs often need to be treated immediately after birth: some of them need some medication, the others need to be treated by cardiac catheterization or by surgery. To be prepared to take care of such patients soon after birth, we need to diagnose critical CHDs prenatally. The history of prenatal cardiac screening program during the second started in the Czechoslovakia in 1986.

The thesis is divided into 7 parts. Introduction, organization, and the results of the second trimester screening program in Czechoslovakia (later in the Czech Republic) from 1986. Then, different detailed aspects of prenatal diagnosis and possible fetal interventions in this group are discussed: left heart lesions, severe CHDs, aortic stenosis, hypoplastic left heart syndrome, and coarctation of the aorta. Remaining parts of the thesis are divided into rare congenital heart abnormalities, congenital complete heart block and associated genetic abnormalities.

The main aim of the study was to assess the impact of first trimester screening on the spectrum of CHDs and the outcomes of fetuses with CHD later in pregnancy. The authors compared the

two time periods 1996 to 2001 and 2007 and 2013, before and after the implementation of the first trimester ultrasound screening program. (FTS was implemented in the Southern Moravia region in most fetal medical centers by 2003). Their results confirmed the significant impact of first-trimester screening on the spectrum of CHDs later in pregnancy and on the outcomes of pregnancies with a CHD. More severe forms of cardiac abnormalities and higher comorbidities resulted in an increase in early termination of first-trimester pregnancies. Less severe forms of cardiac abnormalities were diagnosed in the second trimester. These fetuses had better postnatal outcomes because of more frequent biventricular circulation and fewer associated comorbidities.

The detection rate of all CHDs is about 45% prenatally, and the detection rate of critical CHDs, which can cause heart failure immediately after birth, is about 80 - 85%.

Dr. Jičínská confirmed that first-trimester fetuses are mostly diagnosed with CHD with univentricular circulation, which is often associated with additional extracardiac and chromosomal abnormalities and has a very poor prognosis. Therefore, most parents with such fetuses (85%) decided for termination of pregnancy in the first trimester. In the second trimester, CHDs mostly exhibit with biventricular circulation and less associated comorbidities allowing a better prognosis. Therefore, fewer parents decided to terminate pregnancy (32%). The first-trimester screening changed the spectrum of CHDs in the second trimester in comparison to first trimester during the same time period (2007 to 2013), and also in comparison to the time period before the implementation of first-trimester screening in fetal care (1996 to 2001).

Dr. Jičínská discusses pitfalls and limitations of first-trimester screening, especially the fact, that in some cases of the first-trimester screening, it was impossible to detect even serious heart conditions or to detect CHD which will develop later in pregnancy. Similarly, it was not always possible to predict the development and the outcome of CHD in the first trimester, because a first-trimester fetus is, of course, only in the earliest stage of development.

Reviewer's questions for the habilitation thesis defence

My questions to the habilitant:

1. You are well informed about the local and international situation in the screening and detection of CHD. Your theses are a sophisticated analysis of the local development and actual situation in the field. What would be your vision and goal in organization of the prenatal screening of CHD in the 21. Century? By whom and when should the pregnant population be screened?
2. What are the technical possibilities of pathologic confirmation of first trimester sonographic findings? Does the ability of pathologic confirmation of the sonographic diagnostics support centralization of the diagnostic process?

To summarize, the above-mentioned articles have original hypotheses and most of them have been published in outstanding high-ranking journals.

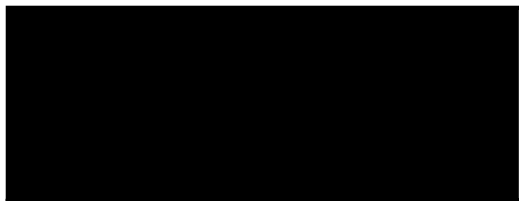
Her presentations are well prepared and she is an outstanding speaker and teacher.

She has been regularly invited as a speaker to national and international conferences. She is hardworking and reliable, highly respected in the medical community.

In comparison to our institution, First medical school of the Charles University in Prague, the candidate would definitely fulfil our criteria for the requested rank and qualification. I believe that Dr. Jičínská achievements place her within the top 10th percentile of individuals working in this area today.

Conclusion

The habilitation thesis entitled “First Trimester Screening of Congenital Heart Defects in Pregnancy: More Risk than Benefit?” by MUDr. Hana Jičínská, Ph.D. **fulfils** requirements expected of a habilitation thesis in the field of Paediatrics.



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