

CLINICAL STUDY

The comparison of ultrasonographic placenta examination with pathohistologic verification of fetal anomalies

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Abstract: Ultrasonographic diagnostics is a sovereign diagnostic method of discovering disorders in growth and development of embryo. The main aim of this research was The Comparison of Ultrasonographic Placenta Examination with Pathohistologic Treatment of Placenta considering those pregnancies, which were previously verified to have embryo anomalies, and which were ended by the procedure of feticide. During the period of 2005 – 2008, 15 pregnant women, with gestation between 24th and 28th week, were hospitalized in our clinic. The patients with the embryo anomalies were divided into three groups:

I – the group with the diagnosis of embryo hydrocephalus,

II – the group with the diagnosis of other anomalies of growth of embryo's CNS,

III – the group of patients with other embryo anomalies.

Pathohistologic placenta examinations were carried out in the Department of Pathology and Forensic Medicine in KC Kragujevac.

The ultrasonographic placenta finding of the patients with the different embryo anomalies was not statistically very different (χ^2 -test; $p=0.073$). However, beside the lack of the significant difference, what was reasonable considering the size of the sample, we noticed quite different ultrasonographic findings of the placenta examination of the patients having the embryo with hydrocephalus in comparison to those patients having the other embryo anomalies of CNS. The ultrasonographic placenta examination of the patients having other embryo anomalies was similar to the finding of the patients having the embryo with hydrocephalus, and the most frequent finding in the group with hydrocephalus was a cystic degeneration of placenta, and in the group with other anomalies the hydrops placenta anomalies. Among the groups of patients with different placenta anomalies, statistically significant difference was not noticed in the pathohistologic finding obtained by placenta examination (χ^2 -test; $p=0.955$).

Ultrasonography is a sovereign, non-invasive diagnostic procedure in antenatal protection of pregnant women. If we should doubt that there exists an inadequate growth and development of embryo, such pregnancy must be correctly diagnosed and treated as soon as possible, ideally until 22nd week of gestation (Tab. 4, Fig. 1, Ref. 7). Full Text in free PDF www.bmj.sk.

Key words: placenta, fetal anomalies, ultrasonography.

Ultrasonographic diagnostics is a sovereign diagnostic method of discovering disorders in growth and development of embryo (1). Routine ultrasound examination of healthy pregnant women means discovering the number of embryos, the position of embryo, embryo water, the place of placenta and the evaluation of normal placenta anatomy supplemented by standard fetal biometrics. If we should doubt that there exists an inadequate growth and development of embryo and placenta, it is necessary to have a detailed, that is to say, expertized ultrasonographic examination, with the aim of recognition of such inadequate growth and development (2, 3). Having an ultrasound placenta examination, we can be informed about its localization, insertion, limitation and its thickness (volume) and tissue structure (4, 5).

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The aim of the work

The aim of this research was the comparison of ultrasound placenta examination with pathohistologic treatment of placenta considering those pregnancies, which were previously verified to have embryo anomalies, and which were ended by the procedure of feticide.

Method

Using the retrospective analysis, we concluded that during the period of 2005–2008, 15 pregnant women were hospitalized at our clinic. Concerning that we dealt with those pregnancies with gestation between 24th and 28th weeks, feticide was committed after receiving permission for ending pregnancy from the Ethics Committee. Ultrasonographic placenta examination was carried out during the expertized sonography immediately before deciding to commit feticide. The descriptive medical findings were divided into the clinical entities estimating the conti-

Tab. 1. Numerical and percentage review of the presence of fetal anomalies.

Hydrocephalus foeti	The other anomalies of CNS	The other anomalies of embryo
6 (40%)	3 (20%)	6 (40%)

Tab. 2. The descriptive finding of the ultrasonographic placenta examination by groups.

The decriptive examination of the placenta by ultrasound	Hydrocephalus	The other anomalies of CNS	The other anomalies of embryo
Cystic structure	3	–	–
Hydrops	2	–	4
Homogenous structure*	1	–	1
Hypertrophic	–	1	–
Nonhomogenous	–	1	–
Hypoplastic	–	1	1

Tab. 3. Pathohistologic findings of placenta examination by groups.

PH finding	Hydrocephalus	The other anomalies of CNS	The other anomalies of embryo
Hyalinisatio et calcificatio placentae	5	2	4
Chorioamnionitis chronica	1	1	2
Oedema funiculli umbilici	6	2	6

nunity of basal body, insertion, volume (thickness), and echo-structure of placenta substance. The procedure of feticide was carried out in regular treatments using intracardial application of 7.4 % KCl or transabdominal, intra-amnial instillation of 20 % NaCl under the control of ultrasound.

The patients with the fetal anomalies were divided into three groups:

I – the group with the diagnosis of embryo hydrocephalus,

II – the group with the diagnosis of other anomalies of growth of embryo’s CNS,

III – the group of patients with other embryo anomalies.

In the first group of the patients we had four cases of symmetric, and two cases of asymmetric dilatation of brain ventricle. The second group was presented by the following pathological pictures – Syndrome Dandy Walker – in one case, two cases of anencephalus. The third group consists of different pathological entities – Hydrothorax et ascites foetii in three cases of non-immunological origin, two cases of multiple anomalies of visceral organs with the defects of the front abdominal wall of embryo and anomalies of digestive tract of fetus with the image of anal atresia and resultant megacolon with the existence of skeletal anomalies of embryo. Pathohistologic placenta examinations

were carried out in the Department of Pathology and Forensic Medicine in KBC Kragujevac.

According to the description of ultrasonographic placenta examination, we reached the following results:

group I: cystic degeneration of placenta 3, hydrops of placenta 2, homogenous structure of placenta 1,

group II: hypertrophy of placenta 1, nonhomogenous structure of placenta with calcification 1, hypoplasia of placenta 1,

group III: hypoplasia of placenta 1, hydrops of placenta 4, homogenous structure of placenta 1.

According to the pathohistological placenta examination, the dominant presence of inflammatory-degenerative changes with the normal anatomy of blood vessel umbilical cord (14 patients) was proved, except in one case among the third group of patients with the presence of more blood vessels in umbilical cord with hypoplastic changes.

Group I: Oedema funiculli umbilici 6, Hyalinisatio et calcificatio placentae 5, and Chorioamnionitis chronica 1.

Group II: Oedema funiculli umbilici 2, Hyalinisatio et calcificatio placentae 2, and Chorioamnionitis chronica 1.

Group III: Oedema funiculli umbilici 6, Hyalinisatio et calcificatio placentae 4, and Chorioamnionitis chronica 2.

Results

Ultrasound placenta findings of those patients with the different embryo anomalies were not significantly different as far as statistics is concerned (χ^2 -test; $p=0.073$). Even though there was no significant difference, what is logical according to the size of the sample, we can notice quite different ultrasound placenta findings of those patients with embryos having hydrocephalus in comparison to the patients with other anomalies of embryo’s CNS. The ultrasound placenta finding of the patients with other embryo anomalies was similar to the finding of the patients having embryos with hydrocephalus, and the most common finding of the group with hydrocephalus was a cystic placenta degeneration, and in the group with other embryo anomalies it was a hydrops of placenta (Tabs 1–4, Fig. 1).

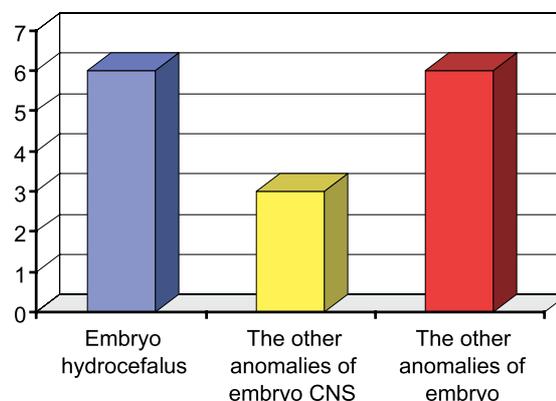


Fig. 1. The graphic representation of the fetal anomalies by groups: 1) hydrocephalus, 2) the other anomalies of CNS, 3) the other anomalies of embryo.

Tab. 4. Ultrasound and pathohistologic finding of placenta of those patients with the embryo anomalies.

THE OBSERVED PARAMETERS		THE GROUPS OF PATIENTS		
		Hydrocephalus of embryo	The other anomalies of the embryo CNS	The other anomalies of embryo
Placenta finding got by ultrasound examination n (%)	Cystic degeneration of placenta	3 (50%)	0 (%)	0 (%)
	Hydrops of placenta	2 (33.3%)	0 (%)	4 (66.7%)
	Homogenous structure of placenta	1 (16.7%)	0 (%)	1 (16.7%)
	Hypertrophy of placenta	0 (%)	1 (33,3%)	0 (%)
	Nonhomogenous placenta with calcification	0 (%)	1 (33,3%)	0 (%)
	Hypoplasia of placenta	0(%)	1 (33.3%)	1 (16.7%)
A placenta finging got by pathohistologic examinationn(%)	Oedema funiculi umilici	6 (50%)	2 (40%)	6 (50%)
	Hyalinisatio et calcificatio placentae	5 (41.67%)	2 (40%)	4 (33.33%)
	Chorioamnionitis chronica	1 (8.33%)	1 (20%)	2 (16.67%)

Between the groups of patients with other embryo anomalies, we could not noticed the statistically significant difference in the pathohistologic finding of placenta examination (χ^2 -test; $p=0.955$).

Discussion

Most embryo anomalies were discovered by ultrasound examination between 24th and 26th weeks of gestation (12 patients), and anomalies were discovered in three cases in 28th week of gestation. In all cases, it was the first clinical examination. In case that there was a doubt of disorders of growth and development of embryo, the recommendation is to have an expertized ultrasonographic examination between 20th and 24th weeks of gestation, so that we could act as soon as possible in further treatments of such pregnancies (6, 7). The analysis of the data given in the tables 2, 3, 4, in which the pathohistologic diagnosis is presented by sublimed pathological states, was not appropriate for statistical interpretation, which is not basically necessary concerning the comparison with the descriptive ultrasonographic finding after the placenta examination.

Ultrasonographic pathologic states found by the placenta examination were adequately confirmed by histologic examination. The comparison of biometrical parameters of anomalous embryos with pathohistologic findings was not possible, because in most cases the evacuation of embryo after feticide was done by using operative techniques (dissection of foetus).

Conclusion

Ultrasonography is a sovereign, noninvasive diagnostic procedure in antenatal protection of pregnant women. In case that

there is any doubt of disorders in growth and development of embryo, it is an imperative to adequately diagnose and treat such pregnancy as soon as possible, ideally before the 22th week of gestation.

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