Jurnal Medical Aradean (Arad Medical Journal)
Vol. XVII, issue 3-4, 2014, pp. 60-63

PERINATAL AUTOPSY EVALUATION OF 452 AUTOPSIES IN ARAD, ROMANIA

Dr. Ülgüt Corina[1], Conf.Dr. Paiusan Lucian[2]

[1]Resident doctor, Morphopathology Departament, "Salvator Vuia" Obstetric and Gynecology Hospital Arad, Romania
[2]Head of Morphopathology Departament, "Salvator Vuia" Obstetric and Gynecology Hospital Arad, Romania

ABSTRACT. Congenital anomalies have become an important cause of perinatal mortality and morbidity in both developing and developed countries. It has been shown through some studies that these can be reduced substantially by means of improved prenatal, obstetric and postnatal care (1, 2, 5). The aim of this study was to present the incidence of fetal anomalies in our city of Arad, Romania, in order to determine the efficiency of prenatal diagnosis through fetal autopsy, and to compare our statistical data with other national and international studies. The study included 452 autopsies performed between January 2004 and December 2013 at our Hospital of Obstetric and Gynecology "Salvator Vuia" Arad, Romania. Diagnoses were categorized according to the detected pathologies; congenital malformations were detailed based on systems. Congenital malformation were detected in 51,53% of cases, of which 51,50% cardiac malformation, 21,03% neural tube defects and central nervous system malformations, 10,30% pulmonary malformation, 7,30% malformations of the urogenital system, 3,43% malformations of the musculoskeletal system and 1,72% malformations of the face. Cerebral hemorrhage was finding in 93,81% of cases, of which 6,60% with the dilatation of the ventricular system. The role of fetal autopsy remains very important in order to clearly identify some other defects in terminated fetuses. Parents can also be better informed about the possible risks in future pregnancies with the help of the findings received through fetal autopsy so that they can take necessary precautions. A larger number of cases is required for a more accurate evaluation.
Key Words: Autopsy, Fetal diseases, Congenital malformation, Prenatal diagnosis

INTRODUCTION

Congenital anomalies have become an important cause of perinatal mortality and morbidity in both developing and developed countries. It has been shown through some studies that these can be reduced substantially by means of improved prenatal, obstetric and postnatal care (1, 2, 5).

The answers provided by the fetal or perinatal autopsy benefit the parents and extended family as well as allowing the treating physician to understand and counsel about the etiology identified for the loss. Most parents after losing a pregnancy or newborn have many questions that can be answered only after a high quality autopsy. The autopsy can provide valuable explanations, and it allows care providers to offer more accurate genetic counselling to the family and helps in planning for the management of future pregnancies.

A further issue to be dealt with thoroughly is the implications of anomalies in fetuses for future pregnancies. Women will normally want to know whether their future pregnancies will end in similar anomalies in their fetuses, and so the exact data obtained from autopsy examination can be offered to them. A specialist pediatric pathologist might provide important information about the possible risk of recurrence

Autopsy findings are more likely to be useful when no clear clinical diagnosis is available or when there is a fetal malformation.

Jurnal Medical Aradean (Arad Medical Journal)
Vol. XVII, issue 3-4, 2014, pp. 60-63

MATERIAL AND METHODS

In this study, we retrospectively reviewed data of 452 cases of neonatal and perinatal deaths that underwent autopsy in Arad at Hospital of Obstetric and Gynecology "Salvator Vuia" Arad, Romania, between January 2004 and December 2013.

The procedure followed in perinatal autopsies was different from autopsies of adults. In fact, the causes and origins of deaths, contributory factors and ability to survive were different in neonates from those of adults. Histopathologic analyses of the specimens stained with haematoxylin eosin were performed under a light microscope in the laboratory of Hospital of Obstetric and Gynocology "Salvator Vuia" Arad. The analyses were performed almost in all cases except highly putrefied ones.

The findings of the 452 cases were categorized according to the congenital malformations, cerebral hemorrhage and infections.

Congenital malformations were sub-categorized according to isolated system abnormalities and multi-system abnormalities. We also analyzed and compared the distribution of the number of cases by the 10 years.

RESULTS

452 fetuses were examined during the ten-year study period from January 2004 to September 2013. Among these fetuses, 159 were from women whose pregnancy had been terminated medically for prenatally detected fetal abnormalities, 115 were dead in utero and 178 were newborn.

The male to female ratio was 217/229. The gender could not be detected in 3 fetuses because of severe autolysis and maceration, 1 case has agenesia of external genital organs and 2 cases presets sympodie.

The most frequent fetal age was the second trimester as found in 220 cases (48.67%), followed by the third trimester in 102 (22.57%) cases and first trimester in 15 cases (3.32%). 115 cases (25.44%) were newborn (0-1 month).

A congenital malformaton was detected in 233 (51.53%) cases, cerebral hemorrhage in 424 (93.81%) cases, autolysis were detected in 139 (30.75%) cases, infections in 20 (4.42%) cases, polyserositis in 87 (19.25%) cases, hepatomegaly in 201 (44.47%) cases and adrenal gland hemorrhage in 137 (30.31%) cases. Among the dead fetuses, 28 cases were found to have no pathology (Table I).

Table I. Fetal autopsy findings

Type of Pathology	Number of cases	%
congenital malformaton	233	51.53
cerebral hemorrhage	424	93.81
infections	20	4.42
polyserositis	87	19.25
hepatomegaly	201	44.47
adrenal gland hemorrhage	137	30.31
autolysis	139	30.75
no pathology	28	6.19

Frequencies congenital abnormalities were as follows from highest to lowest: congenital malformations of the cardiovascular system, nervous system, respiratory system, urogenital system, abdomen wall and diaphragm defects, skeletal system and craniofacial malformations. Abnormalities with respect to systems are listed in Table II.

Table II. Distribution of congenital malformations based on systems

Diagnoses	n (%)
Congenital malformations of the nervous system	**49 (10.84%)**
Anencephaly	6
Hydrocephaly	24
Cerebral atrophy	9
Encephalocele	2
Meningoencephalocele	1
Ossified cerebral suture	1
Iniencephaly	1
Macrocephaly	2
Cervical rahiskizis	1
Spina bifida	2
Cardiovascular system malformations	**120 (26.55%)**
Atrial septal defect	13
Ventricular septal defect	12
Global cardiomegaly	11
Transposition of great arteries	4
Truncus arteriosus	11
Dilatation of right atrium	14

Jurnal Medical Aradean (Arad Medical Journal)
Vol. XVII, issue 3-4, 2014, pp. 60-63

Dilatation of right ventricule	15
Pulmonary artery dilatation	9
Pulmonary artery stenosis	6
Pulmonary valve stenosis	2
Ventricular hypertrophy	8
Hypoplastic left heart	4
Dextrocardia	1
Left ventricule infarction	2
Subendocardial hemorrhages	6
Interventricular septa hypertrophy	2
Respiratory system malformations	**24 (5.31%)**
Hyalen membrane disease	5
Unilateral pulmonary hypoplasia	7
Bilateral pulmonary hypoplasia	11
Right pulmonary lobe agenesis	1
Urogenital system malformations	**17 (3.76%)**
Infantile polycystic renal disease	6
Unilateral renal hypoplasia	1
Bilateral renal hypoplasia	6
Right kidney agenesis	1
Horseshoe kidney	1
Urinary bladder agenesis	1
External genital organs agenesis	1
Craniofacial malformations	**4 (0.88%)**
Cyclopia	1
Keilo cleft palates	1
Cleft palates	1
Bilateral ocular agenesis	1
Musculoskeletal system malformations	**8 (1.76%)**
Polydactily	2
Syndactily	2
Radius agenesis	1
Thumb agenesis	1
Sympodie	2
Gastrointestinal system/Abdominal wall/Diaphragm malformations	**11**
Diaphragm hernia	8
Malrotation	1
Anal atresia	2

DISCUSSION

Congenital malformations are one of the most common causes of perinatal deaths and our rate was 51.53%. Fetal autopsy is accepted to be as important as and perhaps even more important than karyotype analysis and prenatal ultrasonography in comparative studies in the literature (3-7). Fetal autopsy provided more information than prenatal ultrasonography in these studies. Any information is important for the obstetrician who has to answer the questions of families about the risk of recurrence in following pregnancies.

Our results showed an equaly distribution in annual autopsy numbers, in only 2 years the autopsy number reached 57 cases in 2006 and 54 cases in 2011 (Figure 1). There are many reasons for this, such as: detailed information about the benefits of fetal autopsy is not provided to family members in contrast to past years due to the heavy workload and social security problems.

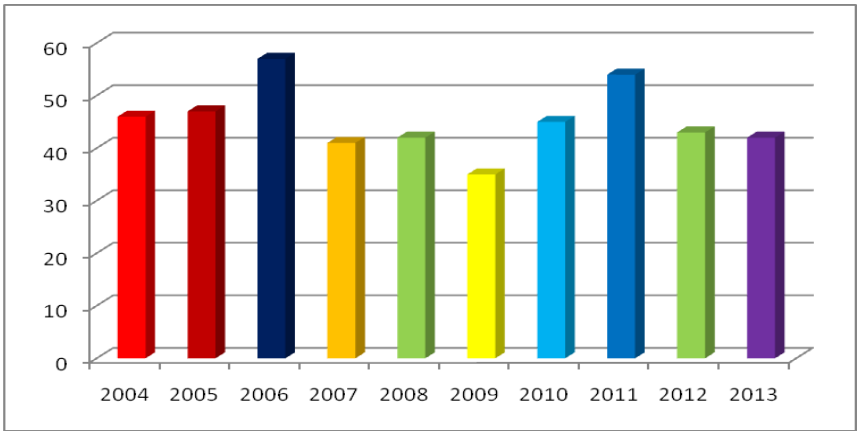

Figure 1: Number of autopsies performed in our institute from 2004 to 2013 per year.

Causes of perinatal and postnatal deaths were detected and/ or supported by fetal autopsy in 424 of 452 (93.81%) cases in the present study. Congenital malformations were found in 233/452 cases (51.53%).

Congenital malformations of cardiovascular system was the most frequent type of malformations 120/233 cases (51.50%) in our study. This malformations consist manly of right ventricule and atrium dilatation, atrial and ventricular septal defect, global cardiomegaly, truncus arteriosus and pulmonary artery dilatation or stenosis. Cardiovascular system anomalies are not easy to detect in the early weeks and in stillborn fetuses as the vascular structures are very fine and sensitive to dissection.

The second most frequent malformation type was neural tube defects and central nervous system abnormalities were found in 49/233 cases (21.03%) in our study and this was under the rate of 31.1-74.2% reported in the literature (2, 6-8). The vast majority of this group consisted of hydrocephaly, seen in 24 cases, followed by cerebral atrophy in 9 cases and anencephaly in 6 cases. NTD cases are consistently reported at high rates in the literature as they are easily detected on prenatal ultrasonography (2).

The third most frequent abnormality in our studies was respiratory system malformations 24/233 cases(10.30%). This consist mainly of pulmonary lobes hypoplasia and hyalen membrane disease.

Urogenital system malformations were observed in 17/233 cases (7.30%). Most of the cases was Infantile polycystic renal disease and bilateral renal hypoplasia. Renal abnormalities are usually associated with severe oligohydramnios and are therefore easy to detect in the prenatal period.

The aim of this study was to focus on congenital malformations but it is of note that there was a high incidence of autolysis related to undetected intrauterine deaths with 30.75% (139/452) of the cases, where the autopsy procedure could not detect an abnormality even if present. The benefits of autopsy need to be evaluated in this aspect so that the request can be selective to avoid overloading the health care and social security systems.

To summarize, this large series of 10 years of results showed that congenital malformations are the most common reason of perinatal deaths. The quality of devices is continually increasing and yielding more accurate results with an ultrasound scan. However, the role of fetal autopsy remains very important in order to clearly identify some other defects in terminated fetuses. Parents can also be better informed about the possible risks in future pregnancies with the help of the findings received through fetal autopsy so that they can take necessary precautions. A larger number of cases is required for a more accurate evaluation.

References:

1. Sloan EP, Kirsh S, Mowbray M: Viewing the fetus following termination of pregnancy for fetal anomaly. JOGNN 2008, 37: 395-404
2. Dickinson JE, Prime DK, Charles AK: The role of autopsy following pregnancy termination for fetal abnormality. ANZJOG 2007, 47: 445-449
3. Nielsen LA, Maroun LL, Broholm H, Laursen H, Graem N: Neural tube defect and associated anomalies in a fetal perinatal autopsy series. APMIS 2006, 114:239-46
4. Bourke J, Bower C, Blair E, Charles A, Knuiman M: Thre effect of termination of pregnancy for fetal abnormalites on trends in mortality to one year of age in Western Australia. Paediatr Perinat Epidemiol 2005, 19:284-293
5. Ceylaner S, Ceylaner G, Gunyeli I, Ekici E, Tug M, Taner D, Ekerbicer H, Mollamahmutoğlu L, Danişman N: Postmortem evaluation of 220 prenataly diagnoses fetuses with neural tube defect detection of associated anomalies in a Turkish population. Prenat Diagn 2006, 26: 147–153
6. Corabian P. Guidelines for investigation stillbirths: an update of a systematic review. J Obstet Gynaecol Can 2007;29:560–7.
7. Gordijn SJ, Erwich JJ, Khong TY. (2002). Value of perinatal autopsy: critique. Pediatr Dev Pathol 2002;5:480–8.
8. Grover N. Congenital malformations in Shimla. Indian J Pediatr. 2000;67:249-51.