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Prevalence of Fetomaternal Indications of Therapeutic Abortions in Yazd Province

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ABSTRACT

Background: Therapeutic abortion is defined as intentional termination of pregnancy in order to save the mother's life and health or when the fetus has an abnormality incompatible with normal life. The aim of this study was to evaluate causes of issuance of therapeutic abortion in women referred to the Yazd province Legal Medicine Organization to terminate the pregnancy.

Methods: In this cross sectional study, all the applications for therapeutic abortions from March 2014 to March 2016 approved by the legal medicine organization of Yazd province were included and recorded. The data was analyzed by SPSS software.

Results: From 333 permissions for abortion during three years, 299 cases (89.8%) were issued for the reason of fetal indications and 34 cases (10.2%) for maternalindications. The most prevalent fetal abnormalities indicated for abortion were central nervous system disorders (especially Anencephaly and Spina Bifida); Hydrops Fetalis and Down syndrome, respectively and the most frequent maternal disorders were cardiovascular diseases.

Conclusion: The current study shows that therapeutic abortions due to fetal abnormalities are increasing. It seems that educating health professionals and people and increasing their awareness about preventing fetal abnormalities and also contraception in women with maternal diseases indicated for abortion could be an effective way to reduce the rate of abortion.

Introduction

Abortion refers to the termination of pregnancy by any means before the fetus can survive outside the uterus and may be spontaneous or induced. Induced abortions are either elective (illegal) or therapeutic.[1] According to the World Health Organization, 19 millionunsafe abortions occur annually and an estimated 68,000 women die as a consequence of unsafeabortions each year all over the world. About 99% of all maternal deaths arise in developingcountries[2] Indications for termination of pregnancy reflect the laws of the country and the religion. Abortion is legally permitted in many countries under definite conditions, In Iran termination of pregnancy is limited to therapeutic abortion.[3]

Therapeutic abortion is a kind of induced abortion when continuing pregnancy may lead to threatening of mother's life and health or birth of fetus with severe congenital anomalies[4] Congenital anomaly (birth defect) is defined as a structural or functional defect that occur during intrauterine life and may be detected prenatally, or be visible at birth or later in life. Congenital anomalies are a global health problem and responsible for many cases of perinatal mortality, stillbirths and spontaneous abortions and death in early post natal period. Annually an estimated 7.9 million children are born with a serious birth defect and 3.3 million children under five years die from birth defects, who they survive may develop a long term disability which can cause a significant effect on individuals, families, healthcare system and societies.[5] Regarding to severity of abnormality, congenital anomalies are classified to major or minor. They can confine to a single system or involve multiple systems.[6]

The prevalence of congenital anomalies varies greatly from country to country and even in the same country from one region to another. Such variations could be explained by ethnic, environmental factors and ecological and socio-economic differences.[6] Prevention of congenital anomalies in the developing countries requires the implementation of several steps. A first step is the providing of good epidemiological data on the prevalence and types of birth defects and genetic disorders.[7]

The Guideline for Therapeutic Abortion containing indications that it was legislated by the Islamic parliament in 2005. According to the current law any request for issuing permission for therapeutic abortion is merely acceptable through the Legal Medicine Organization; if three specialist make definite diagnoses about the fetus being malformed or retarded, thus causing the mother to suffer severely, or about the mother's own life-threatening conditions only before ensoulment of fetus (before four months). The Legal Medicine Organization has defined 100 fetal and maternal disorders to apply for a legal abortion license. Some fetal indications are Hydrops Fetalis with any etiology; conditions resulting in neonatal death such as Anencephaly and disorders leading to handicap or disability; maternal indications include: life-threatening maternal conditions such as active phase of HIV infection, malignancy (i.e. cervical and breast cancer, leukemia and colorectal cancer), Molar Pregnancy, renal diseases, severe heart diseases, autoimmune diseases such as Systemic Lupus Erythematous (SLE), etc.[3]

The WHO categorizes unsafe abortion as a major public health problem as well as one of the easiest preventable causes of maternal mortality. Most abortions are safe in countries where the procedure is lawfully permitted, in the other word when therapeutic abortion is legally available, it is generally safe.[8,9] Awareness of physician and pregnant women of abortion indications and referring to Legal Medicine Organization at the right time can significantly reduce illegal and unsafe abortion. Assessing causes of applications for therapeutic abortion, undoubtedly contributed to find new indications which may lead to birth of healthy infants and reduce illegal abortion. The present paper was aimed to

determine types and prevalence of indications for therapeutic abortion in pregnancies that they were authorized to terminate by Legal Medicine Organization of Yazd province during a period of three years.

Materials and Methods

This cross sectional study was performed using all medical documents of women who visited the Yazd Province Legal Medicine Organization to apply for a legal abortion license and were approved and authorized, between March 2014 and March 2016. The data recorded for each woman included: age, residence, level of education, occupation, gestational age, type of fetal or maternal indications for the abortion and their diagnostic methods. Incomplete data was omitted from the study. The study was approved by the Ethics Committee of Shahid Sadoughi University of Medical Sciences. As ethical point, the patients identity information were kept confidential. The data was analyzed by SPSS using analytical statistics to determine distribution frequency and means of all variables.

Results

A total of 333 licenses for abortion were issued by the Yazd province Legal Medicine Organization between March 2014 and March 2016. In 89.8% of cases (n = 299) the reasons for issuance of abortion license were fetal abnormalities and in the rest (10.2% or 34 cases) were the maternal disorders (Figure 1). Most of the abortions licenses were issued in 2016 (41.1%). The mean age of the mothers was 30.2 ± 6.4 (age range: 17-46). The highest applications for abortion were in the mothers at age range of 30-35 years (28.3%) and the least were in mother's ≥ 20 years (3.3%).Among which 333 women, 2.7% (n = 9) were illiterate, 18% (n = 60) had primary and middle school education, 31.5% (n = 105) had diploma, 42.6% (n = 142) had higher education and level of education of 5.1% (n = 17) was not mentioned. Approximately 79% (n = 263) of the women were housewives and the rest were involved in other jobs.

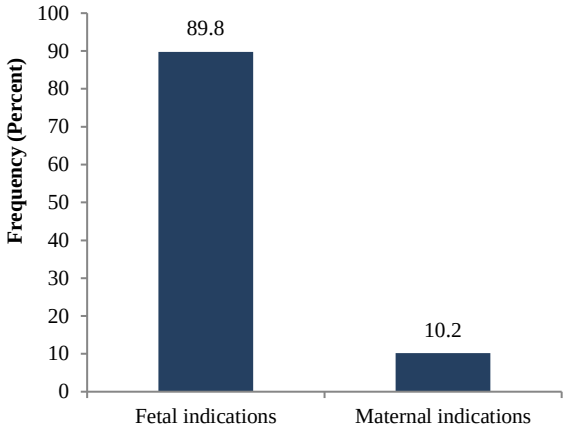

Figure 1. Distribution of indications for therapeutic abortions in women applying for a legal abortion license at the Yazd Province Legal Medicine Organization (March 2014 -March 2016).

The abortion licenses were predominantly issued for fetuses at gestational age of 15-19 weeks (66.1 %) and then for fetuses at gestational age of 10-14 weeks (27.9%). Gestational age for 6.0% of the fetuses was less than 10 weeks (Table 1). There were two or more fetal abnormalities indicated for abortion in some fetuses. Totally, 353 fetal abnormalities were recorded. The main fetal abnormalities indicated for abortion were central nervous system disorders (30.0%), Hydrops Fetalis (15%); and Down syndrome (11.3%) (Figure 2). Skeletal Dysplasia was the major abnormality of musculoskeletal system. Autosomal Recessive Polycystic Kidney (ARPKD) was the major abnormality of genitourinary system. Omphalocele and Hypoplastic Heart Syndrome were the most common anomalies in gastrointestinal system and cardiovascular system, respectively (Table 2). The most prevalent maternal causes of abortion were cardiovascular diseases and severe hypothyroidism (Table 3). None of the mothers had infective diseases such as toxoplasmosis, rubella or herpes.

Table 1. Characteristics of women applying for a legal abortion licence at the Yazd Province Legal Medicine Organization

Variable	Frequency	Percent
Maternal Age		
≥ 20	13	3.9
20-25	51	15.3
25-30	88	26.4
30-35	93	28
35-40	59	17.7
40 ≤	29	8.7
Total	333	100
Level of Education		
Illiterate	9	2.7
Primary and middle school	60	18
Diploma	105	31.5
Higher education	142	42.6
Unknown	17	5.1
Total	333	100
Occupation		
Housewife	263	79
Others (employed, self-employed)	70	21
Total	333	100
Gestational age based on ultrasound (weeks)		
≥ 10	20	6
10-14	93	27.9
15-1 9	220	66.1
Total	333	100

Discussion

This retrospective study examined causes of issuance of legal abortion license from Yazd Legal Medicine Organization during 3 years. The study showed 89.8% (n = 299) of abortion licenses were issued due to fetal abnormalities and 10.2% (n = 34) due to maternal diseases. The most frequent fetal indications for abortion were central nervous system disorders, Hydropes Fetalis and Down syndrome while most frequent maternal indications were cardiovascular diseases and severe hypothyroidism.

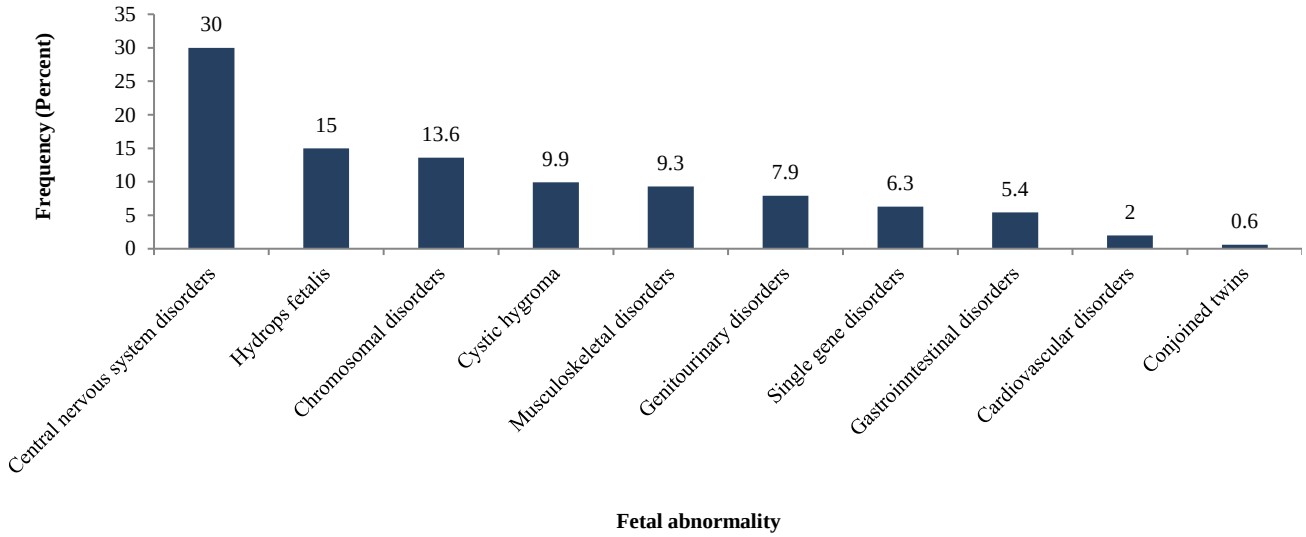

Figure 2. Distribution of therapeutic abortions according to fetal indications

Table2. Distribution of fetal abnormalities according to systems involved.

Abnormality	Frequency	Percent
Neurological System		
Anencephaly	25	7.1
Encephalocele	10	2.8
Spina Bifida (Spina Bifida Occulta, Meningocele, Myelomeningocele)	25	7.1
Hydrocephalus	11	3.1
Ventriculomegaly	10	2.8
Dandy Walker Syndrome	6	1.7
Holoprosencephaly	10	2.8
Others (Hydrencephaly, Microcephaly, Acrania, Joubert Syndrome)	9	2.5
Total	106	30
Genetic Disorders		
Chromosomal Abnormalities		
Down Syndrome (Trisomy 21)	40	11.3
Edward Syndrome (Trisomy 18)	4	1.1
Patau Syndrome(Trisomy13)	1	0.3
Triploidy	2	0.6
Trisomy 8	1	0.3
Total	48	13.6
Single Gene Disorders		
Major Thalassemia	13	3.7
Haemophilia	5	1.4
Spinal Muscular Atrophy (SMA)	2	0.6
Phenylketonuria (PKU)	1	0.3
Ichthyosis	1	0.3
Total	22	6.3
Musculoskeletal System		
Severe Skeletal Dysplasia	12	3.4
Diaphramatic Hernia	4	1.1
Achondroplasia	7	2
Others (Arthrogryposis, Multiple Skeletal Anomalies)	10	2.8
Total	33	9.3
Cardiovascular System		
Hypoplastic Heart Syndrome(HLHS & HRHS)	4	1.1
Severe Valvular Stenosis (aortic stenosis & pulmonary Stenosis)	2	0.6
Single Ventricle Heart	1	0.3
Total	7	2
Gastrointestinal System		
Omphalocele	14	4
Gastroschesis	2	0.6
Others	3	0.8
Total	19	5.4
Genitourinary System		
Autosomal Recessive Polycystic Kidney (ARPKD)	12	3.4
Multicystic Dysplastic Kidney (MCDK)	2	0.6
Severe Hydronephrosis	3	0.8
SturacturalRenal Abnormalities + Severe Oligohydramnios	11	3.1
Total	28	7.9
Conjoined Twins	2	0.6
Cystic Hygroma	35	9.9
Hydrops Fetalis	53	15
Total	353	100

Table 3. Distribution of therapeutic abortions according to maternal indications

Maternal Diseases	Frequency	Percent
Cardiovascular diseases	7	20.6
Hypothyroidism	6	17.6
Diabetes	3	8.8
Kidney diseases	2	5.9
Blood pressure	1	2.9
Cirrhosis	1	2.9
Thyroid cancer	1	2.9
Lupus	1	2.9
Hemiplegia followed by stroke	1	2.9
Hemolytic anemia	1	2.9
Malignant Peripheral Nerve Sheath Tumors (MPNST)	1	2.9
Treatment-Resistanse Depression (TRD)	1	2.9
Placental Anomalies		
Hydatidiform mole	2	5.9
Placenta accreta	2	5.9
Placenta increta	4	11.8
Total	34	100

Our findings were consistent with some other studies previously reported. In the study of Soleimanpour et al. in Esfahan, as well as the study of Naeeji et al. in Tehran, respectively 75.8% and 88% of abortions have fetal indication for abortion.[10,11] In both studies central nervous system disorders, Hydrops Fetalis and trisomies have been the most common cause of abortion. The main maternal cause of abortion in Naeeji study was cardiovascular diseases. In another study by Forouzesh et al. in Hormozgan 82.56% of therapeutic abortions were due to fetal abnormalities and 13.52% of due to maternal causes.[12] In their study the main fetal indications for abortion were central nervous system disorders (especially Anencephaly and Microcephaly) and Major Thalassemia and the main maternal indication for abortion were renal disorders. In the study of Dadipoor et al. and Ghadipasha et al.;[13,14] cardiovascular disorders were the main maternal indication for abortion. In both studies the greatest proportion of the women applying for an abortion license for fetal indications had a fetus with Major thalassemia where it was rare in our investigation. It shows that thalassemia is now under the control of health care system in the country.

The causes of difference between the prevalence of congenital anomalies in various regions of the country may reflect different methods of detection and recording, or true differences in frequency due to consanguineous marriage rate, dissimilar environmental exposures, genetic constitutions or the interaction of both.

According to our findings central nervous system disorders (Anencephaly and Spina Bifida) were the most frequent fetal abnormalities licensed an abortion. Folic acid deficiency is a well-known factor predisposing to neural tube defects and possibly other congenital anomalies.[15] Despite this fact, most women are not aware of folic acid benefits to prevent neural tube defects. It is recommended that all the women who want to become pregnant consume 400 mg of folic acid from a month before conception to the end of first trimester daily.[16]

Another high frequent fetal abnormality in the present study and some other similar studies were chromosomal abnormalities (especially trisomy 21). A large number of studies have reported that fetal chromosomal abnormalities including trisomy 21, trisomy 18, and trisomy 13 have a direct association with advanced maternal age.[17] Therefore couples should be encouraged to complete reproduction before 35 years of age of

mother. By reducing birth rate, family planning may contribute to a decline in birth prevalence of chromosomal abnormalities. It is estimated combined with encouragement to complete reproduction before the age of 35, family planning can contribute to a 50% reduction of Down syndrome.[18,19]

With regard to this point that in many cases permission for abortion is not issued because gestational age is over 19 weeks, for this reason it may make a trend to illegal abortion. So that it is necessary for experts to aware of indications of therapeutic abortions and to improve the diagnostic skills for early diagnosis of fetal abnormalities.

Conclusion

The present study shows high prevalence of therapeutic abortion due to fetal abnormalities. For reducing the rate of fetal abnormalities it suggests: to improve the epidemiological knowledge about genetic disorders and birth defects, to select preventive programs according to prevalence, severity and the predicted outcomes of interventions and improve prenatal services, including family planning and maternal nutrition. For women with cardiovascular disorders contraception is indispensable.

Conflict of Interests

Authors have no conflict of interests.

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