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Original Article

Importance of Ultrasound Exam in the Diagnosis and Active Management of Twin Pregnancies

Ioan-Ovidiu G*

Directorate of Public Health and Hematologist Gorj, Faculty of Medical Science and Behaviours, Constantin Brancusi University, Targu-Jiu, Romania.

***Corresponding author:** Ioan-Ovidiu G, Directorate of Public Health and Hematologist Gorj, Faculty of Medical Science and Behaviours, Constantin Brancusi University, Targu-Jiu, Romania.

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Abstract

The study carried out over a period of 5 years within the University Hospital of Craiova shows the incidence of twin births compared to singleton births and tells the difference with the incidence in Clinics in Timi?oara, Bucharest, Cluj-Napoca, where it also gets close to 1%. The incidence of preterm births is about 6 times greater than in singleton births. Preterm twins can experience a series of major complications (respiratory asphyxia, hyperbilirubinemia, brain haemorrhage, etc.). Twin pregnancies are frequently associated with the mother's diseases (pregnancy-induced HTA, placenta previa, urinary tract infections). The authors highlight the importance of caesarean delivery that protects the second foetus that may experience major distress, especially if extracted through obstetrical manoeuvres.

Keywords: Twin Pregnancy; Preterm Birth; Doppler Velocimetry

General

We generally consider as normal the birth of a single foetus. Accepting this statement as being true, the twin pregnancy becomes a subject of major interest in the light of the multiple implications in the medical attitude.

The number of twin pregnancies has increased lately due to Assisted Reproductive Technologies (IVFs), as well as the increase in the number of older pregnant women.

Compared to singleton pregnancies, twin pregnancies are associated with a higher risk. With regard to the foetus, the risks are expressed by signs of morbidity and mortality primarily related to the high prediction of twins to be born before the due date and low birth weight; but also with regard to the mother morbidity is higher through the presence of pregnancy-induced HTA and postpartum haemorrhage.

Monozygotic twins originate from splitting into two or more parts of an embryonic mass, making them genetically identical [1, 4].

Polyzygotic twins define the situation in which foetuses originate from ovulation and fertilization of different eggs [4].

Twin pregnancy represents in fact the evolution in the uterine cavity of two foetuses resulting from 1 or 2 concomitantly or successively fertilized eggs. It is possible for the foetuses to use the same placental mass and possibly the same amniotic cavity. Fertilization can occur in the same menstrual cycle or in two different menstrual cycles (superfœtation) [1].

With regard to monozygotic pregnancy the day of embryo splitting is important for the evolution of twins (it is also the case of Siamese twins). Most of the twin pregnancies are dizygotic pregnancies.

Twin pregnancy accounts for about 1% of pregnancies. On average, a twin pregnancy occurs once in 80 singleton births. Incidence has increased lately due to infertility treatment and the increase in the number of older pregnant women. The highest incidence was found in Africa and the lowest in Japan. Twin pregnancy is more frequent in primiparous women and in families originating from twin pregnancies. Twin pregnancies are more frequent in the summer (light stimulates pituitary gland to produce hormones). Twins follow a growth curve similar with a singleton pregnancy until the third trimester when their growth rate is slowed down.

The risk of perinatal death is higher in case of monochorionic placentas. Twin-to-twin syndrome occurs most frequently in monochorionic placentas. The etiologic substrate of twin-to-twin syndrome consists of arterio-venous anastomoses. The umbilical cord is shorter in twins, and abnormal insertion occurs in 16% of cases (1% in singleton pregnancy). The diagnosis of twin pregnancy is done by anamnesis, clinical obstetrical examination and is confirmed by the ultrasound examination.

In twin pregnancies there are many risk factors and complications that occur during pregnancy, during delivery and postpartum. More frequent maternal complications include: preeclampsia, abortion, placenta previa, postpartum haemorrhage. Birth complications include: preterm birth, foetal hypotrophy, presentation dystocia, amniotic infection, premature rupture of the membranes, uterine rupture.

The perinatal mortality rate is six times higher than at singleton births. The risk of mortality is higher for the second twin. Mortality and increased morbidity are also associated with preterm birth. The death of one of the foetuses in the uterus is likely to occur as well. The risk of late disability occurrence is higher than in the singleton pregnancy.

The conduct in twin pregnancy is of particular nature. The concern is that both the mother and the children are well nourished and that the antepartum care is made on a continuous basis. In order to avoid preterm birth and foetal hypotrophy, it is sometimes necessary for long-term hospitalization, tocolytic medication, cervical cerclage. For accelerating the pulmonary maturity, corticoids are administered. Doppler velocimetry is the most useful in foetal follow-up.

One of the most controversial problems is choosing the route of delivery. It shall be strictly individualized with regard to anaesthesia at delivery, the manoeuvre to extract the second foetus, caesarean surgery.

Material and Method

The purpose of the study was to determine the incidence of preterm birth and foetal hypotrophy in Romanian clinics and to record the risks of twin foetuses in uterus, upon birth and postpartum. The study period covered 5 years. The study materials were represented by data noted in observation sheets (analysis reports, e.g. ultrasound), births registers (vaginal, caesarean surgery or extraction manoeuvres for the second foetus), histopathological examination of foetal annexes. It was also monitored the mortality and morbidity of the twins in relation to maternal risk factors, as well as the risks of preterm new-borns and postpartum hypotrophies and the condition of the mother at birth and postpartum.

Results Obtained and Discussion Upon Them

The incidence of twin pregnancies in Romanian clinics is presented in detail in table no. 1

	Total of deliveries	No. of twin births	Incidence
University Hospital Craiova (5 years)	15984	164	1.01%
University Hospital Bucharest	15369	101	0.65%
Bega Obstetrics-Gynaecology Clinic Timisoara	8515	76	0.86%
Clinic I Cluj-Napoca	29410	186	0.87%

Table 1: The incidence varies in connection with geographical conditions, but it maintains closely to 1% in all the areas of the country of the number of births.

	Twin births	Incidence
< 20 years	8	4%
21-25 years	31	15.7%
26-30 years	45	23%
31-35 years	67	34%
1-40 years	61	33%
> 40 years	2	1%

Table 2: Distribution of twin pregnancies by age groups in the University Hospital of Craiova (7 years).

We note an increased incidence in older pregnant women. The increased incidence of twin pregnancies in older women is described by many authors and in many publications. In 2002 (Blondel and Kaminski), the authors draw attention to the fact that from the rate of increase in the incidence of twin pregnancies, a quarter to a third can be attributed to the current increase in the age of the pregnant woman.

In the USA during 1980- 1999:

- age group 30-34 years – an increase of 62%

- age group 35- 39 years - an increase by 81%

- age group 40- 45 years – an increase by 110% [8]

The phenomenon could be explained on the one part by the higher number of women in industrialized countries postponing pregnancy moment and by the spread of the use of assisted reproductive technologies to older women.

Of the 328 twins born in the County Emergency Clinical Hospital Nr. 1 Craiova, 203 (61%) were premature, the incidence being of about 5 times higher than in singleton births. Of these preterm new-borns, 21 were hypotrophic. In Romania, the preterm births represent around 10%.

In twin pregnancy the risk of giving birth to underweight children is 10 times higher than for singleton pregnancies (Luke and Keith). Growth inequality between twins is possible due to the unequal degree of separation of the initial single cellular mole or the imbalance of the bidirectional flow of foetal blood through placental vascular communication between the 2 circulations.

The proportion of giving birth to preterm and hypotrophic new-borns is higher for women in rural areas, 60% in the region of Oltenia where, due to physical effort, there is occurrence of uterine hyperexcitability and uterine contractions or spontaneous break of the membranes; but the percentage is quite high for intellectual women as well, 36% for the County Emergency Clinical Hospital no. 1 Craiova, it is connected to the psychical balance of pregnant women and pregnancy surveillance.

Women who have in their heredocollateral history twin pregnancies give birth to twins in 38% of cases (County Emergency Clinical Hospital No. 1 Craiova).

Preeclampsia	36%
Anaemia in pregnancy	52%
Diabetes	18%
Placenta previa	20%
Cervico-isthmic incontinence	10%
Other disorders	21%

Table 3: Diseases of the pregnant mother with twin pregnancy and preterm births.

Beyond any doubt whatsoever the evolution of the mother's diseases is aggravated by the twin pregnancy, but it also influences the growth and development of the conceptual product.

Birth asphyxia	40%
Respiratory distress syndrome	30%
Hyperbilirubinemia	20%
Cerebral haemorrhage	11%
Retinopathy	12%
Severe anaemia	6%
Neonatal mortality	10%

Table 4: Complications of preterm and / or hypotrophic twins [8].

The study shows that the second foetus is the most affected [3, 7, 8].

Presentation	First foetus	Second foetus
cranial	101	45
breech	42	89
transversal	20	31

Table 5: Foetal presentations in twin pregnancy.

The high number of breech and transversal presentations in the second foetus leads to the conclusion that in many cases it is born with a great deal of distress with mostly unfavourable evolution.

Natural	41	27%
Caesarean	90	58%
Obstetric manoeuvre	28	14%

Table 6: Type of delivery

Neonatal asphyxia was more frequent in the second foetus and furthermore the Apgar score and acid-base balance were deficient in the second foetus. The extraction manoeuvres for the second foetus have led to the increase of foetal distress and mortality.

For the diagnosis of twin pregnancy and the evolution of the cases, Doppler ultrasound was also monitored, as it is absolutely necessary.

The histopathological examination (20 cases) referred to the type of the placenta and explained in the fatal cases the etiology of foetal distress and respectively foetal hypothrophy and death of the foetus.

Conclusions

Twin pregnancies have an incidence in County Emergency Clinical Hospital Nr. 1 Craiova of 1.01%, a value close to the incidents in the Clinics in Romania and the data derived from the civilized Western countries.

Twin pregnancies were more frequent in older women, in women who have used in vitro fertilization technology, in women who have in their heredocollateral history twin pregnancies.

The pathology of the pregnant woman associated to twin pregnancy included pregnancy-induced HTA, iron-deficiency anaemia, urinary tract infections, placenta previa, cervical incontinence.

Preterm birth and foetal hypotrophy was very high (60%). The prevention of preterm birth requested bed rest, tocolytic medications, cervical cerclage, treatment of pregnancy-associated diseases.

Twins, particularly preterm and hypotrophic new-borns are a high-risk category, namely: foetuses with respiratory asphyxia at birth, also with hyperbilirubinemia syndrome, cerebral haemorrhage, retinopathy, anaemia, etc. , which requires a special attitude upon birth and postpartum.

Our statistics and literature data show that caesarean surgery has been frequently used. The percentage is 2-3 times higher than for singleton pregnancies.

The study of the ultrasound exam showed the presence of a particular vascular profile of the foetuses and of the placental circulation with consequence in the growth and development of the foetuses.

The histopathological exam of placentas helps determine the causes of possible foetal deaths and makes a fair assessment of zygotism.

Our study demonstrates that the second foetus can be affected by many causes (development of placenta, uterine contractions, but also extraction obstetrical manoeuvres), and in consideration thereof we sustain caesarean delivery in the case of twin pregnancies.

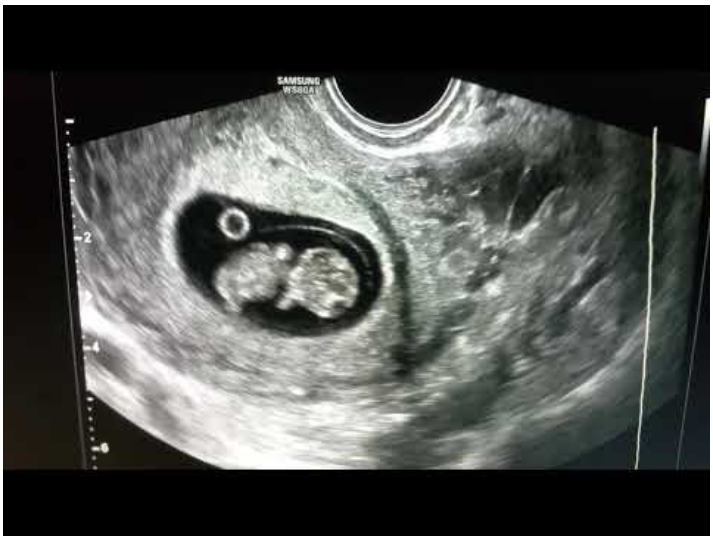

Figure 1: Active Management of Twin Pregnancies.

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