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Echographic Screening for Fetal Malformations at the Gynecological and Obstetric Clinic of the Aristide Le Dantec Hospital: Review from 2016 to 2018

Samb F*, Nandong NT, Niang MM, Faye-Dieme ME and Cisse CT

Department of Gynecology-Obstetrics, Hospital Institute of Social Hygiene of Dakar, Dakar, Senegal.

***Correspondence:**
SAMB Fatou, Hospital Institute of Social Hygiene, Dakar, Senegal, Tel: +221 77 532 32 57.

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ABSTRACT

Introduction: *Congenital malformations affect around 3% to 4% of live births and 20% of stillbirths. They represent 20 to 30% of the causes of infant mortality in the countries of the European Community. It is estimated that 5 to 10% of malformations are due to exogenous or environmental causes and 12 to 30% to genetic or endogenous causes (gene mutations or chromosomal anomalies). In almost 60% of cases, the actual origin of the malformation remains unknown. Nevertheless, the origin of these anomalies is still being researched, and numerous diagnostic tools are available to practitioners to improve antenatal screening and pregnancy monitoring. However, obstetric ultrasound remains the primary tool for antenatal screening and monitoring of congenital malformations.*

Methodology: *Our main objective was to evaluate the practice of ultrasound screening for foetal malformations at the Gynaecology and Obstetrics Clinic at Hôpital Aristide Le Dantec from 1 February 2016 to 31 December 2018. We conducted a retrospective study of ultrasound screening for foetal malformations.*

Results: *At the end of our study, 869 obstetric ultrasounds met our inclusion criteria. We had 837 singleton pregnancies (96.3%), 31 twin pregnancies (3.6%) and 1 trimellar pregnancy (0.1%). We noted 35 cases of foetal malformations, an incidence of 4.02%. All cases of malformations were diagnosed in singleton pregnancies. The average age of the patients was 29 years, with extremes of 18 and 45 years. Primiparous women were the most represented in our study (62.5%). The majority of patients were from Dakar. A history of recurrent miscarriage was found in 7 patients (20%) and there was one case of fetal death in utero during the previous pregnancy. There was no family history of malformations. Consanguinity was found in 11 cases (31.4%). Only 2 patients were found to have taken medication, one for insulin and the other for an unspecified drug. There was no evidence of toxic intake.*

Fetal malformations were observed in the 3rd trimester in 23 cases (42.9%). There were 11 cases in the 2nd trimester (31.4%) and only 1 case in the 1st trimester. Cranioencephalic malformations were detected in almost half of the cases (42.8%), i.e. 15 cases. There were 8 cases of polymalformative syndromes, i.e. 22.8%. Digestive malformations were represented in 3 cases, i.e. 8.6%, as were cardiac malformations in 3 cases. Pulmonary malformations and limb malformations accounted for 5.7% and 2 cases each. Renal malformations and orofacial malformations also accounted for 1 case each, 2.9% respectively. Among the 15 cases of malformations of the nervous system, ventricular dilatation ranked first with 10 cases representing 66.6%, followed by anencephaly and cystic hygroma with 2 cases each representing 13.3% and finally dolichocephaly with 1 case representing 6.7%. We found 8 different cases of polymalformative syndromes. These syndromes were labelled in 2 cases and unlabelled in the 6 others. There was 1 case of trisomy 21 and 1 case of trisomy 13. The other cases of polymalformative syndromes were not clearly labelled. A combination of cerebral, $cardiac and/or renal malformations were reported.

Digestive malformations were noted in 3 cases (8.6%), including 2 dilatations of the coves (megacolon) and 1 case of omphalocele. Pericarditis, atrial septal defect and transposition of the great vessels were the cardiac malformations found in a total of 3 cases (8.6%). Two cases of achondroplasia were found in our series (5.7%). They were all associated with oligohydramnios. There were 2 cases of pulmonary hypoplasia (5.7%). These were associated with anamnios and a medullary syndrome in one of the cases. Cleft lip and palate and polycystic kidney disease were present in one case each (2.9%). The pregnancy resulted in vaginal delivery in 21 cases (60%), caesarean section in 13 cases (37.1%) and in 1 case the mode of delivery was not specified. The main indication for Caesarean section was hydrocephalus (61.5%). The anomaly and the type of malformation were announced in 85.5% of cases. A referral for fetal ultrasound was suggested in 5.7% of patients and fetal MRI in 2.9%. Concordance between antenatal and postnatal diagnosis was achieved in 18 cases (51.4%). The pregnancy resulted in vaginal delivery in 21 cases (60%), caesarean section in 13 cases (37.1%) and in 1 case the mode of delivery was not specified. The main indication for Caesarean section was hydrocephalus (61.5%). The anomaly and the type of malformation were announced in 85.5% of cases. A referral for fetal ultrasound was suggested in 5.7% of patients and fetal MRI in 2.9%. Concordance between antenatal and postnatal diagnosis was achieved in 18 cases (51.4%). Neonatal mortality accounted for 62.9% of the series, with 22 cases.

***Conclusion:** Fetal malformations were detected with a concordance of 51.4% between antenatal and postnatal diagnosis. Neonatal mortality was high. A major preoccupation should be the strengthening of cytogenetic diagnosis and management resources, and raising awareness of the origins of congenital malformations.*

Keywords
Congenital malformations, Prenatal ultrasound screening, Hopital Aristid Le Dantec.

Introduction
Congenital anomalies are malformations observed at birth. They affect 3% of births [1]. According to the World Health Organisation in 2010, they caused 270,000 deaths worldwide, i.e. approximately 7% of all neonatal deaths [2]. Congenital anomalies are an economic and social burden for society as a whole and for parents because of the physiological and psychological consequences for the individual affected. For this reason, an established programme for antenatal screening as part of the planning of early postnatal management of foetal anomalies is necessary, in order to reduce the psychological impact on parents and limit the cost of management. Ultrasound plays a major role in this area [3]. It is the main screening tool. Fetal ultrasound imaging techniques have made the vast majority of fetal malformations accessible for prenatal diagnosis [4]. It allows a study of morphology, vitality and fetal and/or neonatal prognosis. The scarcity of data on antenatal diagnosis of foetal malformations in our country motivated this work.

Patients and Methods
Our main objective was therefore to evaluate the practice of ultrasound screening for foetal malformations at the Gynaecological and Obstetric Clinic of Hôpital Aristide Le Dantec. This was a retrospective descriptive study conducted over a period of thirty-five months, from 1 February 2016 to 31 December 2018. Our study population consisted of pregnant women who had undergone at least one ultrasound scan at the CGO. Our study took place in the ultrasound unit of the Gynaecological and Obstetric Clinic of the Centre Hospitalier Universitaire Aristide Le Dantec, a reference centre for reproductive health located in the Dakar plateau.

The study included all pregnant women with a single foetus, twin or more and who had undergone obstetric ultrasound. We did not include patients who no longer had an ultrasound report, patients for whom the ultrasound had concluded that the pregnancy was terminated, a molar pregnancy or a clear egg, and those who did not wish to take part in the telephone interview.

Data were collected using ultrasound examination records and telephone interviews with patients. All examinations were carried out with Chison i3 and Phillips ultrasound scanners, equipped with a 5 MHz convex probe and a 6 MHz endovaginal probe, by the CGO's senior obstetric gynaecologists and interns. Data entry, analysis and tabulation were performed using sphinx plus 2 and Microsoft Excel 2010.

Ethical Considerations
This study respected the confidentiality of all information retrieved from the registers, as well as anonymity. The results and conclusions did not imply any stigmatisation or attack on individual or group dignity.

Results
Frequency
During the study period, we recorded 1097 obstetric ultrasounds. Of these, 869 met our inclusion criteria. We had 837 singleton pregnancies (96.3%), 31 twin pregnancies (3.6%) and 1 trimellar pregnancy (0.1%). We noted 35 cases of foetal malformations, an incidence of 4.02%. All of these were singleton pregnancies. Cases that did not meet our inclusion criteria are detailed in Figure 1.

Epidemiological profile of patients
The average age of our patients was 29 years with extremes of 15 and 45 years. They were paucigravida in 42.8% and primiparous in 42.9%. Forty percent of our patients were from Dakar and 17.1% from the sub-region, as shown in Table 1.

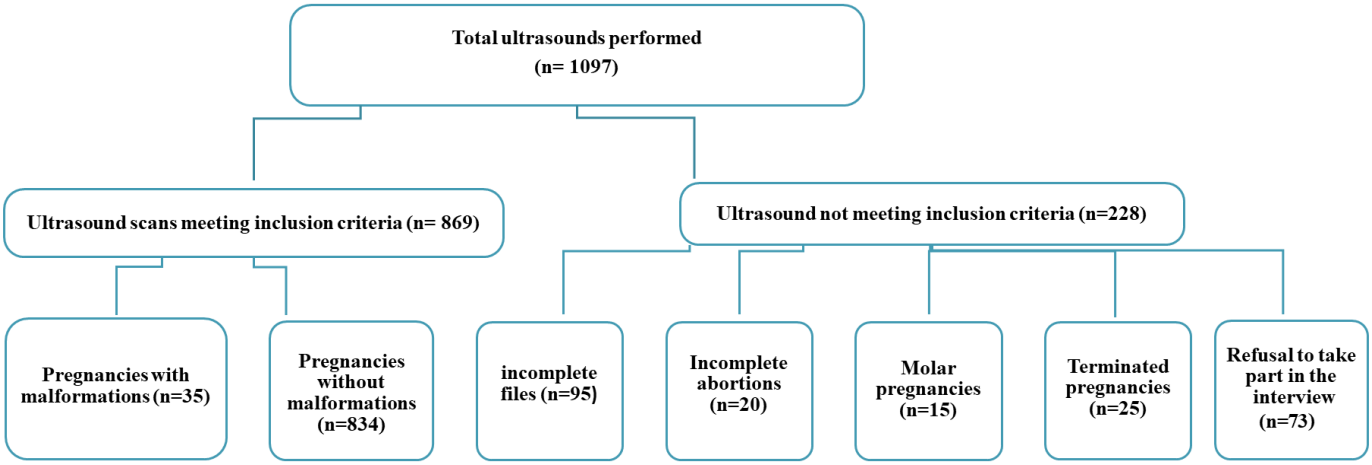

Figure 1: Diagram showing the distribution of ultrasound scans of pregnant women included in the study.

Table 1: Epidemiological profile.

Epidemiological profile	Average	Maximun	Minimum	N = 35
Age	Average 29 years	45 years old	15 years old	
Gestité	Primigeste	Paucigeste	Multigeste	
	8 22,9%	15 42,8%	12 34,3%	
Parity	Primipare	Paucipare	Multipare	
	15 42,9%	13 37,1	7 20%	
Geographical origin	Dakar	Régions	Outside Senegal	
	14 40%	15 42,9%	6 17,1%	

Past history

There were 11 cases of consanguinity, one case of malformation during previous pregnancies and one case of malformation in the siblings (Table 2).

Table 2: Distribution of patients according to history.

History		Yes	No
Medical	Drug intake	2	33
	Toxic intake	0	35
Obstetrical	Spontaneous miscarriage	7	28
	Fetal death in utero	1	34
	Fetal malformation	1	34
Family	Consanguinity	11	24
	Malformations in mother's family	0	35
	Malformations in father's family	0	35
	Malformations in siblings	1	34

Pregnancy course

The number of antenatal visits ranged from 1 to 12, and in the majority of cases patients had undergone more than 5 ANCs. The women had undergone at least two ultrasound examinations. In the majority of cases (65.7%), the malformations were identified in the third trimester of pregnancy, as shown in Table 3.

Table 3: Number of prenatal visits and time of ultrasound diagnosis (N = 35).

Prénatal consultations (PNC)	Less than 4	4 PNC	5 PNC	6 PNC and more
	5 14,3%	4 22,9%	5 17,1%	6 and more 45,7%
Obstetrical ultrasound	1 100%	2 40%	3 75%	≥4 42%
Period of ultrasound diagnosis	1st Quarter 2,9%	2nd Quarter 31 ,4%	3rd Quarter 65,7%	

Pathologies during pregnancy

We recorded 3 patients (8.57%) who had presented with a pathology during pregnancy. These were pre-gestational diabetes in the case of a 45 year old patient, IVth gesture IIIrd pare, and anaemia in the case of a 36 year old patient, Vth gesture IIIrd pare. In the other case, the type of pathology was not specified.

Results of the ultrasound examination

GESTATIONAL AGE AT DIAGNOSIS Gestational age at diagnosis

The majority of foetal malformations were diagnosed between the 28th and 38th gestational age, i.e. 60%. The attitude of the provider at the time of diagnosis in 85.5% the announcement of the existence and type of malformation as shown in Table 4.

Type of malformation detected

Cranioencephalic malformations were detected in almost half the cases (42.8%). In 8 cases (22.8%), the sonographer concluded that a polymalformative syndrome was present (Table 5).

Delivery Data

Of the patients, 21 (60%) had given birth vaginally and 13 (37.1%) by caesarean section. Most caesarean sections were planned. Among the indications for caesarean section, hydrocephalus dominated with 8 cases (61.5%). The indication for caesarean

Table 4: Antenatal diagnosis and the provider's attitude at the time of diagnosis.

Gestational age	< 14 SA 2,9%	[14 SA-22 SA] 5,7%	[22 SA- 28 SA] 22,9%	[28 SA- 34 SA] 60%	≥ 34 SA 8,5%	
Provider's attitude at diagnosis	2,9% IRM fœtale	2,9% Notification in the notebook	5,7% Reference ultrasound	8,6% Notification in the minutes only	85,5% Announcement of abnormalities	85,5% Typical anomaly announcements

Table 5: Description of malformations detected.

Malformations detected		Antenatal diagnosis	Number	Percentage (%)
Isolated	Cranioencephalic	Hydrocephalus	5	14,3
		Anencephaly	2	5,7
		Cystic hygroma	2	5,7
		Ventriculomegaly	5	14,3
		Dolichocephaly	1	2,9
	Orofacial	Cleft lip and palate	1	2,9
	Pulmonary	Hypoplasia pulmonary	2	5,7
	Cardiacs	Atrial septal defect	1	2,9
		Pericardial effusion	1	2,9
		Transposition of large vessels	1	2,9
	Digestivves	Mégacolon	2	5,7
		Omphalocele	1	2,9
	Kidney	polycystic kidney disease	1	2,9
	Skeleton	Achondroplasia	2	5,7
Polymalformative Syndrome		Trisomy 21	1	2,9
		Trisomy 13, eye anomalies.	1	2,9
		Corpus callosum agenesis, IUGR and other anomalies	1	2,9
		Right renal agenesis, non-visualized bladder and hydrops fetalis.	1	2,9
		Anencephaly plus suspected esophageal atresia.	1	2,9
		Sexual ambiguity and IUGR	1	2,9
		Multi-cystic renal dysplasia and other anomalies	2	5,7
Total			**35**	**100**

Table 6: Mode of delivery and the new-born's future.

Mode of delivery	Césarienn13 (37,5)	Subcutaneous 21 (60%)	Unspecified 1 (2,9)		
Indication for cesarean section	Hydrocéphalie (61,5%)	Breech presentation (7,8%)	unspecified (3,7%)		
Apgar score	<4 (42,9%)	4 et è7 (2 ,7%)	>7 (11, 4%)	Unspecified 20%	
Birth weight	<1000 mg (5,7%)	1000-2000 mg (20%)	2000-3000 mg 40%	3000-4000 mg 11,4%	Non connu 22%
Comparison of ante- and post-natal diagnosis	Not possible 31,4%	Mismatch 17,2%	Concordance 51,4%		
Post-natal evolution	**Deaths 62,9%**	**Living 11,4%**	**Unspecified 25,7%**		

section could not be specified in 4 patients because they had forgotten and the operative report was not available. The Apgar score was less than 4 in 42.9% of cases. The baby was stillborn in almost half the cases (42.9%). The average weight of the newborns was 2287.1 grams, with extremes of 1020 grams and 4000 grams. It could not be specified in 22.9% of cases. In our study, the post-natal clinical examination confirmed certain malformations diagnosed on ultrasound. The concordance between prenatal and postnatal diagnosis was 51.4%, i.e. 18 cases. We noted a discrepancy in the anomalies found in 17.2%, i.e. 6 cases. In 11 cases it was not possible to compare antenatal and postnatal findings. The discrepancies mainly concerned polymalformative syndromes, pulmonary anomalies, skeletal anomalies and certain cardiac malformations that had not been confirmed at birth. Early neonatal mortality concerned 62.9% of cases, i.e. 22 newborns who had died on day 1 of life. At the time of the survey, 4 children were alive (11.4%). These were a case of heart disease, hydrocephalus (1 case), a case of cleft lip and palate and a child with achondroplasia. The outcome of 9 children could not be determined (Table 6).

Discussion

Epidemiological aspects

In our study, the incidence of congenital malformations was 4.02%. This rate was higher than that of Hind [5], who carried out a similar study under more or less the same conditions, on foetal malformations at the Gynaecological and Obstetric Clinic of the CHU Le Dantec. She found 0.56% over nine years. A study by Neossi [6] on the profile of foetal malformations and anomalies at antenatal ultrasound scans at the Ngaoundéré Regional Hospital in Cameroon reported a rate of 1.21% over 15 months. Rates comparable to ours are reported in the literature and vary between 3 and 4% [4]. Sabiri [7], in his study of risk factors for congenital malformations at the Souissi maternity hospital in Rabat, Morocco, also found an incidence of 4% in 12 months.

The mean age of our patients was 29 years, with extremes of 18 and 45 years. This result is close to that of Sarr [8] who, in a 2011 study on the epidemiology of congenital digestive malformations diagnosed in the neonatal period at the Centre Hospitalier National d'Enfant Albert Royer (Senegal), found an average age of 28.5 years. In a study conducted in the Democratic Republic of Congo on congenital malformations in Lubumbashi from January 2007 to December 2011, the mean age of patients was 28.5 years [9]. We have noted in other studies that the risk of congenital malformations due to chromosomal anomalies is higher the older the parents are (over 35 years) [10,11]. The mean age of our patients is higher than in the study by Neossi [6] who found a mean age of 26 years and in that of Hind [5] who found 23.9 years. This may be explained by the change in lifestyle, the later age of marriage and the more frequent use of birth spacing methods.

In terms of parity, primiparous women accounted for 42.9%. Neossi [6] found similar rates at 17% for pauciparous women and 43% for primiparous women. Our results are not consistent with the literature, which concludes that the risk of malformation increases with parity [10]. The high proportion of primiparous women in our study may be related to the delay in the first pregnancy and changes in lifestyle.

In our study, housewives were the most represented with 68.8%. This result was close to that of Abdirhaman [12] who, in 2011, in a study on the epidemiological aspect of congenital heart disease in paediatrics at the National Children's Hospital in Dakar (Senegal), found that 62.2% were housewives. According to several authors, poverty is a risk factor for the occurrence of malformations [10,12]. In terms of geographical origin, the majority of women (40%) lived in Dakar, as in the studies by Diop [13] 69%, Abdirhaman [12] 63.3% and Koumaré [14] 37%. This can be explained by the fact that Dakar is the most densely populated region in Senegal and has the best technical facilities.

The Wolof ethnic group was also the most represented in our series, as in the studies conducted by Abdirhaman [12] (63.9%) and Koumaré (42%) [14] in Senegal. The high representation of Wolofs can be explained by the fact that this is the majority ethnic group in the Dakar region and that cases from other regions are probably underestimated because of the sometimes difficult geographical access to Dakar for people from the north, east and south of Senegal.

Concerning the study of risk factors, we had only one case of in utero foetal death during a previous pregnancy (2.9%); this was a 45 year old patient, in the fourth gesture, third pare. On the other hand, Fdili [15] in his study on antenatal diagnosis of foetal malformations in Morocco found a history of foetal death in utero in 20% of cases. Tazi [16] in his study of antenatal diagnosis of multicystic renal dysplasia found a 16.66% history of foetal death in utero. Coulibaly found a history of 9.1% fetal death in utero and 15.6% spontaneous abortions in his study [11]. This fact points to a possible genetic origin and requires a cytogenetic study to determine the causal anomaly. However, these tests are rarely available in our context and are very expensive. Another risk factor incriminated in the occurrence of congenital malformations is consanguinity [17]. We found 11 cases (31.4%). Higher rates were noted in the study by Koumaré [14] with 57% second-degree consanguinity and 4% third-degree consanguinity, and that by Sabiri [7] in Morocco with 48.7%. Lower rates were reported by Sarr [8] in his study on the epidemiology of congenital digestive malformations diagnosed in the neonatal period, with 17.4%. This high rate is probably due to our habits and customs, which accept consanguineous marriages. We did not note any malformations in the families of the pregnant women's parents, but we did find 1 case (2.9%) of malformations in the siblings. This was trisomy 21. This result is superposable with that of Koumaré [14] who found 1 case or 1% of familial malformations in his study; this was a case of congenital hydrocephalus. Our result is similar to that of Neossi [6] who found 2 cases 5.7% of malformations in the siblings. On the other hand, Sabiri [7] in his study found 27.5% familial malformations. These familial cases suggest the probable existence of chromosomal abnormalities.

Drug use was found in 2 patients (5.7%): insulin in one and an unspecified drug in the other. In the study by Sabiri [7] in Morocco, 55% of women had taken anti-epileptic drugs and fenugreek-based decoctions, the latter being incriminated in the occurrence of neural tube defects. Many drugs are contraindicated during pregnancy because they can cause malformations, as several authors have pointed out. These include thalidomide, sodium valproate, isotretinoids, methotrexate, mycophenolate, vitamin K antagonists, misoprostol and carbimazole [18]. Taking traditional decoctions is a common practice in our societies. Some of these substances could be teratogenic. However, we have not found any African studies incriminating them in the occurrence of foetal malformations. We did not find any foetal malformations in women with twin pregnancies in our series. However, Sabiri [7] found a statistically significant risk factor between twin pregnancies and foetal malformations (p=0.029). A higher rate of malformations has been reported in twin pregnancies, probably induced by mechanical and ischaemic causes. These are most often cardiac, cerebral and vascular.

In our study, a pathology associated with pregnancy was reported in 3 patients (8.5%). We noted only one case of pre-gestational diabetes. This rate is low compared with that found by Diop [13]. She noted a rate of 80% of pathological pregnancies, 15% of which were diabetic. Coulibaly [11] found 44% of pathologies during pregnancy. It has been established that new, old and/or severe poorly controlled pre-gestational diabetes is associated with a high risk of malformations. The most frequently described malformations are cardiac, caudal regression syndrome, radial aplasia, renal malformations and, at most, a VATER association [19]. The low rate of pathologies associated with pregnancy that we found could be related to an under-evaluation of the latter due to the retrospective nature of our study.

Ultrasonographic aspects

In our series we found that more than half (65.5%) of foetal malformations were detected in the 3rd trimester. Those detected in the 2nd trimester represented 31.4% of cases. Hind [5] made the same observation, with 57.6% and 30.3% in the second trimester. Welffens [20] also found 60% of foetal malformations in the 3rd trimester. On the other hand, Neossi [6] found a higher rate of malformations detected in the 2nd trimester (70.7%). As in other African series, 1st trimester screening (2.9% in our series) is still rare. However, thanks to the progress made, 1st trimester screening is effective and these results show that patients did not respect the periods planned for screening ultrasound.

Regarding the type of malformations detected, we noted a clear predominance of those of the nervous system (42.8%). In a study carried out on the ultrasound diagnosis of foetal malformations in utero in thirty cases in Côte d'Ivoire, Kouadio [21] also had a rate of malformations of the central nervous system of 40% (12 cases). In Kouadio's study [21], malformations of the urogenital system came second at 30%, unlike our results where polymalformative syndromes came second. Another study in Togo by N'Timon [22] on ultrasound screening for foetal malformations showed, like ours, that central nervous system malformations were in the forefront (39.74%). Among the malformations of the nervous system, we found that ventricular dilatation ranked first. These data are comparable to those of Hind [5], who also had the highest rate of malformations of the nervous system with 33.56% for hydrocephalus, and other authors such as Koumaré, Neossi, Sabiri, Welfens and Cunningham [6,7,14,20]. On the whole, anencephaly was diagnosed late in the second trimester, even though this major anomaly is very accessible to first trimester screening [20]. This reflects the low use of 1st trimester ultrasound.

In our series, there were 08 cases of polymalformative syndromes, unlike Hind and Sarr [5,8] who found only one case in their studies. Sabiri [7] in his study found 12 cases of polymalformations. In our study these polymalformative syndromes were secondary to trisomy 21 in 1 case and 1 trisomy 13 in the other. The other syndromes could not be labelled. In order to improve the quality of ultrasound reports, we believe it is necessary to improve the skills of ultrasound technicians in foetal medicine and to improve access to cytogenetic tests. With regard to facial malformations, only one case (2.9%) of cleft lip and palate had been diagnosed. El Fdili [15] in Morocco made the same observation. On the other hand, Bah [10], in his study carried out in Mali, ranked head and neck malformations 2nd. According to the Alsace register of congenital malformations, these malformations are not rare, with a prevalence of 2.1/1000 births [23].

We found 3 cases of digestive malformations, i.e. 8.6% in our series, including 2 dilatations of the coves (mega colon) and 1 case of omphalocele. Our results are similar to those of Neossi [6] who found 1 case of omphalocele and 3 cases of abdominal effusion in his study. El Fdili [15] found 3 cases of omphalocele. Koumaré [14] found 2 cases of omphalocele. The case of omphalocele that we found was not associated with other malformations and this pathology is often associated with chromosomal anomalies [24]. There were 3 cardiac malformations in our study (8.6%): pericardial effusion, atrial septal defect and transposition of the great vessels. These results were similar to those of Hind [5] who found 2 cases in his study, namely cardiomegaly and pericardial effusion. Some data in the literature estimate the prevalence of congenital heart disease at between 3 and 4 per 1000 live births [25]. We found 1 case of polycystic kidney in our study, representing 2.9% of all malformations. Our result is similar to that of El Fdili [15] who found one case of polycystic kidney disease in all renal malformations, as did Hind [24]. Tazi [16] found 18 cases of multicystic renal dysplasia in 7 years. Neossi [6] found 5 cases of polycystic kidney disease. This is a frequent renal pathology that is relatively easy to diagnose. There were 2 cases of limb malformations (5.7%), both of which were achondroplasias. Both were associated with oligohydramnios. Hind [5] and Neossi [6] did not find any cases in their respective studies.

In our study there were 2 cases of pulmonary hypoplasia (5.7%). In the literature, this pathology is rare and most often associated with diaphragmatic hernia [26]. We noted concordance between antenatal and postnatal diagnosis in 18 cases (51.4%). In Neossi this was 95.65% [6]. This was due to the fact that all the women had given birth in another facility where the neonatal examination was not always carried out by a paediatrician. In addition, none of the newborns who died had undergone a foetopathology examination to allow an exhaustive assessment of morphological abnormalities.

Therapeutic aspects

In our study, the announcement of the anomaly and the type of malformation were found in 85.5% of cases. A referral for fetal ultrasound was suggested in 5.7% of patients and fetal MRI in 2.9%. Fetal MRI has a key role to play in the accurate diagnosis of foetal malformations. Fetal MRI and fetal CT are still very expensive examinations, which means that they are rarely requested despite their relative geographical accessibility.

Prognostic aspects

Neonatal mortality in our series was 62.9%, i.e. 21 cases. All of these deaths occurred on day 1 of life. The prognosis depended on several parameters. These included the type of malformation, birth

weight and term at birth. Polymalformative syndromes, cardiac malformations and cranioencephalic malformations are the most delicate and have an unfavourable prognosis.

Conclusion

Screening for foetal malformations was carried out with a concordance of 51.4% between antenatal and postnatal diagnosis. Neonatal mortality was high. A major concern should be to strengthen the means of cytogenetic diagnosis and management, health personnel and awareness in the management of congenital malformations.

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