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Research Article

Study of various congenital anomalies in fetal and neonatal autopsy

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ABSTRACT

Background: The study of dead is to save the livings. The growing awareness that still births and infant mortalities are unable to reduction has led to a wide spread desire for more information regarding the cause of these deaths. Congenital malformations have become important cause of fetal and neonatal (perinatal) mortality in developed countries and would very soon be increasingly important determinants of fetal and neonatal mortality in developing countries like India. In spite of antenatal diagnostic modality still the fetal autopsy plays the vital role in the conformation as well as identification of congenital anomalies and also for the counseling of the parents, to prevent the fetal congenital anomalies in further pregnancies. This study was undertaken with the purpose of finding out cause of death during the perinatal period at government maternity hospital and pediatric department S.V.R.R.G.G.H. & S.V. medical college Tirupati, and to study the clinical and pathological findings (Gross & microscopic) in fetal and neonatal death.

Methods: The present study of congenital anomalies in fetal and neonatal deaths was done at S.V. medical college, Tirupati, over a time period of 2 years from September 2008 to 2010 August. Consent for autopsy in requested compassionately, respectfully and fully informed. The present study included dead fetus and neonates with gestational age above 20 weeks of intra uterine life and within 7 days of post natal life. All fetuses of gestational age <20 weeks and all neonates above 7 days of age were excluded from the study. The study also obtained clearance from the ethical committee of the institution. Autopsy was performed by standard technique adopted by Edith L. Potter. External and internal findings followed by histopathological examination, and autopsy findings were compared with available ultrasound findings.

Results: A total of 46 Autopsies performed, 40 (87%) were fetal deaths, 6 (13%) were early neonatal deaths. In a total of 46 fetuses, there were 13 male and 33 female babies. On external examination of 46 fetal and Neonatal (perinatal) deaths, 8 (17.39%) babies showed congenital malformation. On internal examination of the 46 fetal and Neonatal (perinatal) deaths, 4 babies showed internal congenital anomalies. A total of 46 anatomical and histopathologic examinations were done among fetal and neonatal (perinatal) deaths. Out of 13 autopsies on male babies, 2 had congenital malformation and 33 autopsies on female babies, 7 had congenital malformations. Congenital anomalies were commonest in the birth weight group of 1000-1500 grams accounting for 9 cases. Malformations of central nervous system (33.33%) were most common followed by musculoskeletal system (16.66%), genitourinary and respiratory system (8.33%) respectively.

Conclusion: Most number of perinatal deaths occurred in low birth weight and preterm babies. Study of malformations greatly helpful in genetic counseling and prenatal diagnosis in successive pregnancies.

Keywords: Fetal and neonatal, Autopsy, Congenital anomalies

INTRODUCTION

The incidence of congenital anomalies has been increasing in recent past. The worldwide incidence of congenital disorder is estimated at 3-7%, but actual numbers vary widely due to under reporting of cases in developing countries.[1] The presence of congenital abnormalities in a baby has an emotional effect on only on the mother but also on the family.[2] A congenital anomaly is defined in terms of physical structure as a malformation, an abnormality of physical structure or form usually found at birth or during the first few weeks of life.[3] Congenital malformations remain a common cause of perinatal deaths accounting for 10-15% in developing countries like India.[4] Unlike the situations in developed countries, where congenital malformations are leading cause of infant mortality, in India low birth weight, prematurity, sepsis and infections are still the leading causes. Perhaps for this reason not much attention has been paid to the problem of congenital malformations in India.[5] In spite of antenatal diagnostic modality still the fetal autopsy plays the vital role in the conformation as well as identification of congenital anomalies and also for the counseling of the parents, to prevent the fetal congenital anomalies in further pregnancies. The fetal and neonatal (perinatal) mortality serves as the most sensitive index of maternal and neonatal care. In an area it also reflects the general public health and socio biological features of mothers and infants. The incidence of the perinatal mortality differs between deferent countries. Simultaneously repeated evaluation of this problem is very essential to study their magnitude and causative factor which shows the impact of existing medical facilities as well as need for their expansion.[6] Why do we examine the aborted fetus?, the primary reason must be to device information which can be used to counsel parents in respect of future pregnancies either in the context of recurrence risk of fetal malformations, a subsequent spontaneous abortion (or) intrauterine fetal death. Additional important factors in an audit functions in respect of prenatal diagnosis of malformations. It also provides an opportunity to examine the malformed fetus at a stage earlier in development than was possible previously. Such examinations may contribute to our understanding of the processes of disordered fetal development, this in turn improve treatment of affected live born infant. With the increasing use of ultrasonography for prenatal diagnosis, it has become particularly important to examine the fetus following termination of pregnancy for anomaly. Ultrasound examination is a very effective detector of major structural anomalies, but lacks the specificity which is essential for syndrome diagnosis. Thus fetal examination has a largely confirmatory role when termination of pregnancy has been under taken because of prenatally detected chromosome anomaly (or) genetic metabolic disease, structural anomalies may be present. When invasive procedures have been under taken for diagnosis or therapy, fetal examination should include a deliberate search for traumatic result. All aborted fetus should be transported rapidly to the pathology department, in a fresh, unfixed state. They should be accompanied by appropriate clinical information, so that all essential investigations can be under taken with due dispatch. The recurrence risk of these anomalies varies from negligibly low to 25% depending on the genetic component in the etiology of the disorder. Every effort should be made to identify the etiology of the perinatal death so that appropriate genetic counseling can be given.[7] When any general study of still born is undertaken it is highly desirable that these deaths are clarified as to the cause. A perinatal autopsy can provide an explanation for a loss often relieving the patient and her physician of blame and may reveal a specific disorder for which precise recurrence risk (or) strategies for prevention are available perinatal mortality is going important due to the fact that maximum loss of human life occurs in that period. Such loss is often difficult for patients and their families.[8] The autopsy plays a critical and multifaceted role in modern medicine not the least of which is its function as a quality control and verification mechanism in diagnosis with its ultimate salutary impact on clinical practice.[9] Autopsy studies are important and essential in new born death as the clinical findings are confusing and in spite of thorough pathological investigations, it may not be possible to arrive at the complete pathological diagnosis. This study was undertaken with the purpose of finding out cause of death during the perinatal period at Government Maternity Hospital and pediatric department S.V.R.R.G.G.H. & S.V. medical college, Tirupati during the period of from September 2008 to August 2010.

Aims and objectives

1. To study of the various lesions (congenital anomalies) in fetal and Neonatal Autopsy.
2. To assess the predisposing factors and cause of death by the autopsy method.
3. To study the clinical and pathological findings (Gross & microscopic) in fetal and neonatal death.
4. To assess the incidence of congenital anomalies in fetal and Neonatal Autopsy in and around the Tirupati.
5. To take necessary preventive aspects (counseling) of congenital anomalies.

METHODS

The present study of congenital anomalies in fetal and neonatal deaths was done at S.V. medical college, Tirupati. Study conducted over a time period of 2 years from September 2008 to 2010 August. Consent for autopsy in requested compassionately, respectfully and fully informed. Pathologists must ensure that their work falls within the scope of the autopsy permit and that all medico legal requirements are met before an autopsy is

conducted. The dissecting instruments required for fetal and neonatal (perinatal) autopsy are small scissors and forceps and scalpels. The autopsy protocol was including space for recording specific measurements and norms for particular gestational ages.

Measurements: The Crown Heal (CH) and Crown Rump (CR) lengths should be determined to the nearest 0.5 cum. Chest and abdominal circumferences were taken at the level of the nipple and umbilicus respectively. Foot length correlates especially well with gestational age, and should be obtained in every case. The metric documentation of changes in the face is often a valuable component of the autopsy. The distances between the inner canthi and outer canthi, nasal height and width, philtrum height, mouth width and ear length can be obtained and compared with published norms. Weights: Scales accurate to 0.1 gm. are necessary for perinatal specimens. All major organs should be weighed (i.e. thymus, heart, lungs, liver, spleen, kidney, adrenal glands, brain and placenta) and the date recorded in the autopsy protocol along with expected values. Photographs were taken, they provide indisputable evidence of findings, sharing of dysmorphic face images to geneticist was done for important diagnostic information.

Inclusion and exclusion criteria: The present study included dead fetus and neonates with gestational age above 20 weeks of intra uterine life and within 7 days of post natal life. All fetuses of gestational age <20 weeks and all neonates above 7 days of age were excluded from the study. The study also obtained clearance from the ethical committee of the institution. Autopsy was performed by standard technique adopted by Edith L. Potter. External examination done for inspection of cyanosis, injuries and maceration, skin lesions, all major and minor developmental anomalies were described. The y shaped incision was done which extend from the anterior aspect of each shoulder to the xiphoid proses. Umbilical vein should be examined for signs of inflammation, varnix, rupture (or) thrombus. The two umbilical arteries are examined and inspected in their entirety. The arteries and urachus should be examined for patency and the arteries for hemorrhage (or) thrombosis. Single umbilical artery was an important anomaly and should be documented. The autopsy protocol included the removal of thoracic, cervical, abdominal and pelvic organs en block and subsequently dissected into organ blocks.[10] Internal examination: All internal organs position and size were examined. The internal genitalia are inspected the testis will be undescended in younger fetuses and removed with abdominal contents. Prior opening the pleural cavities the possibility of pneumo thorax should be entertained. Upon entering the chest each cavity should be inspected for fluid, each lung was examined for developmental changes carefully. The integrity and tension of the pericardium are ascertained and the pericardial cavity opened again, the presence of free gas (or) fluid is determined. Any fibrinous deposition over the surface of pericardium (pericarditis) sent for culture or microscopy. Heart is best examined in situ, while anatomic relationship with structures was intact, then inspected externally and internally, in a systematic fashion that follows the movement of the blood. All major veins and arteries were examined. The diagnosis of premature closure foramen ovale can be made. The configuration of tricuspid valve, right ventricle, and main pulmonary artery were studied. The endocardium, myocardium, and configuration of trabeculae, pectinate and papillary muscles and chordae tendineae were examined. After opening the left heart, the interior of the left atrium, pulmonary venous orifices, mitral valve and left ventricle were inspected, followed by examination of the aortic valve and ascending aorta. All other organs were removed as en bloc. Neck structures trachea and esophagus were examined. The scalp, fontanels, and cranial sutures were examined by palpation and any changes were documented. The fontanels, sutures, and glia were examined and any changes were documented. After brain has been exposed, it was examined in situ. After the brain was removed, it is examined on all sides and placed in fixative. Attention should then be turned to the cranial base and dural sinuses. The pituitary gland is removed from the sella turcica by careful testing. Dissecting the viscera: The rokitansky methods of evisceration, the organs were removed together in a block. Examination begins with the most posterior structures and moves anteriorly layer by layer. Aorta, inferior vena cava, adrenal glands and posterior surface of the urinary system exposed and examined. Adrenal glands, kidneys, ureters and urinary bladder were examined. The vagina and uterus were opened in the anterior midline and examined. The liver, gallbladder and structures of the porta hepatis, portal vein, hepatic artery and common bile duct were identified and dissected as indicated. The esophagus was opened in the posterior midline while intact with the trachea. In this way a tracheoesophageal fistula can be identified. After opening, the incision may be carried into the stomach. After major hilar structures of the lungs have been opened and inspected, attention was turned to the lungs themselves. Lobation and condition of the visceral pleura were presumably ascertained. In case of bladder outlet obstruction, the entire urethra must be examined for posterior urethral valves (or) other abnormalities (i.e., anterior urethral valves, mega urethra). Placenta was available in only few cases.

Histopathological examination: The organs after evisceration and external examination were fixed in 10% formalin. Blocks of tissues for microscopic examination were taken, one block from each lobe of both lungs. One block each from thymus, heart, stomach, liver, spleen, pancreas, small intestine, large intestine, kidneys, adrenals, and any doubtful lesions were taken. Sections were studied in the routine way with Haematoxylin and Eosin (H&E) stains. Special stains were done whenever necessary and studied. Autopsy findings were compared with ultrasound findings whenever available.

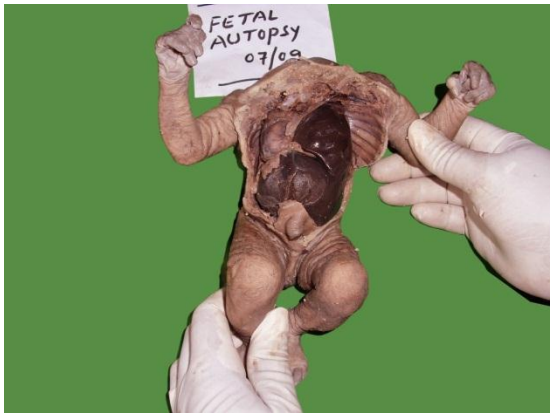

Figure 1: Anencephaly - Absence of a major portion of the brain, skull, and scalp. Presence of diaphragmatic hernia with the liver occupying the left thoracic cavity and the left thoracic contents (heart and lungs) shifted to the right thoracic cavity.

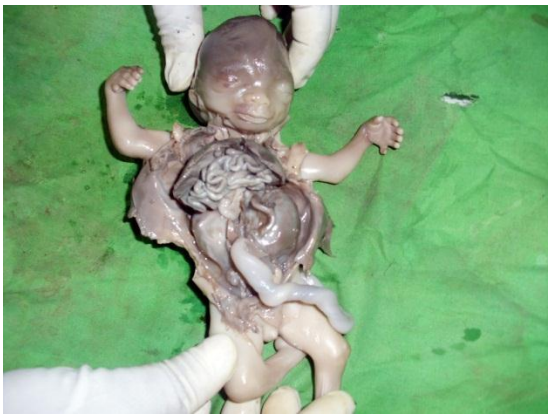

Figure 2: Polydactyly and Syndactyly - The extra digit is most common on the ulnar (little finger) side of the hand, known as postaxial (little finger) polydactyly. In syndactyly, adjacent fingers or toes are joined by soft tissue. This fetus shows presence of bilateral enlarged cystic kidneys.

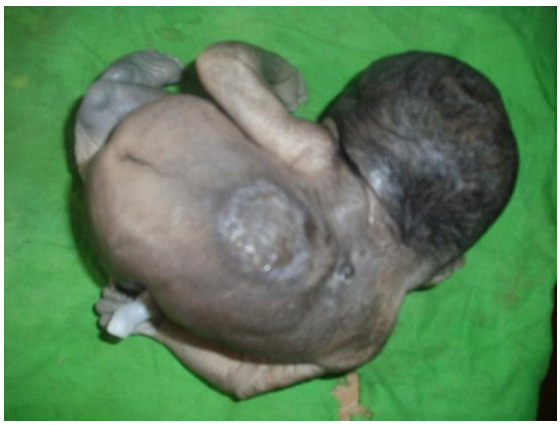

Figure 3: Meningomyelocele - Unfused portion of the spinal column. The meningeal membranes that cover the spinal cord form a sac enclosing the spinal elements.

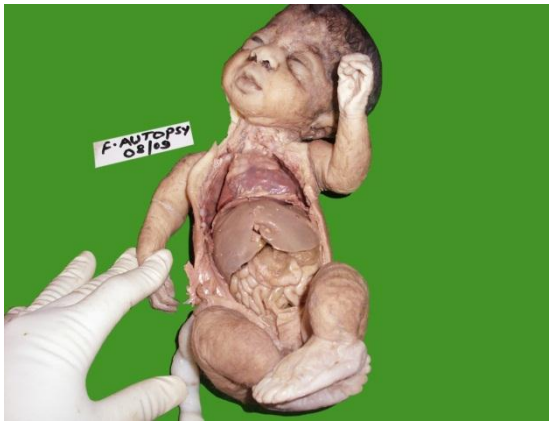

Figure 4: Achondroplasia - Improportionate dwarfism, shortening of the proximal limbs, short fingers and toes, large head with prominent forehead, small midface with a flattened nasal bridge.

RESULTS

A total of 46 fetal and neonatal (Perinatal) autopsies were performed during the period of study, fetal and neonatal deaths occurred in the department of obstetrics and gynecology at govt. maternity hospital, Tirupati, during the period of September 2008 to August 2010. In 46 autopsies performed 40 (87%) were fetal deaths, 6 (13%) were early neonatal deaths. In a total of 46 fetuses, there were 13 male and 33 female babies.

Table 1: Percentage of fetal deaths (FD) and early neonatal death (END).

Classification	No. of cases	Percentage (%)
Fetal death (FD)	40	87
Neonatal death (ND)	06	13
Total	46	100

Among 46 fetus and neonatal autopsies 13 were male babies and 33 were female babies. Out of 40 fetal autopsies 11 babies were male fetus & 29 were female fetuses. Out of 06 neonatal autopsies 02 were male babies 04 were female babies ($X^2 = 29.87$ P <0.001; Significant).

Table 2: Fetal and neonatal death according to maternal age.

Maternal age (years)	Late fetal death		Neonatal death		Total	
	No.	%	No.	%	No.	%
19	02	05	0	0	02	4.34
20-24	11	27.5	02	33	13	28.08
25-29	10	25	01	17	11	23.91
30-34	16	40	01	17	17	36.95
35-39	01	2.5	02	30	03	6.52
Total	40	100	06	100	46	100

The age of mothers of these babies ranged from 19 years to 39 years. 28.08% of fetal and neonatal (perinatal) deaths belonged to maternal age between 20-24 years followed by 23.91% of fetal and neonatal deaths in mothers of 25-29 years of age. About 36.95% of fetal and neonatal deaths occurred in mothers of 30-34 years age. In mothers of 19 years and 35-39 years ages fetal and neonatal (perinatal) death was 4.34% and 6.52% each.

Of the 46 fetal and neonatal (perinatal) deaths, 26 babies (56%) were born to primigravida, followed by 06 (13%) babies who were born to gravida-II. (20%) 9 babies were born to gravida-III remaining (11%) 5 babies were born to gravida>III.

Table 3: Fetal and neonatal mortality in relation to gestational age.

Gestational age (weeks)	Late fetal death		END		Total	
	No.	%	No.	%	No.	%
<28	13	32.5	0	0	13	28
28-31	18	45	0	0	18	39
32-36	03	7.5	0	0	03	07
37-40	06	15	06	100	12	26
41	0	0	0	0	0	0
Total	40	100	6	100	46	100

The gestational age of 46 fetal and neonatal (perinatal) ranged from <28 weeks to 41 weeks. In the gestational age <28 weeks, there were 13 (32.5%) FD and no ND. 28-31 weeks, there were 18 (45%) FD, no ND and 3 (7.5%) fetal deaths, between gestational period 32 and 36 weeks, there were 6 (15%) FD and 6 (100%) ND. In the 37-40 weeks gestational age, 03 neonates (50%) died within 24 hours of life followed by 2 babies (33%) who died within the next 24 hours. The survival period in 1 case was between 72-96 hours.

Of total 46 fetal and neonatal deaths, the 40 fetuses studied, the weight of 2 fetuses (5%) were <500 gm, weight of 12 fetuses (30%) between 500-1000 gm. 10 fetuses (25%) weighed 1001-1500 gm and 11 fetuses (27.5%) weighed 1501-2000 gm. 5 fetuses (12.5%) 2001-2500 gm. Of the 6 neonatal deaths 03 babies (50%) weighed 2001-2500 gm, 01 baby (17%) weighed 2501-3000 gm and 02 babies (33%) weighed above 3000 gm.

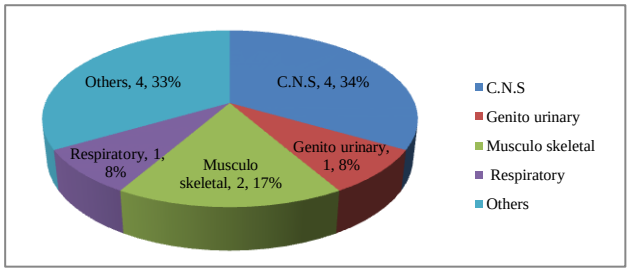

Figure 5: Percentage of system wise Congenital anomalies.

External congenital anomalies: On external examination of 46 fetal and neonatal (perinatal) deaths, 8 (17.39%) babies showed congenital malformation, (Table 4).

Table 4: External congenital anomalies.

System affected	Type of anomaly	No.	Total	%
C.N.S.	Anencephaly	03	04	50
	Meningomyelocele	01		
Musculoskeletal	Polydactyly Syndactyly	01	02	25
	Achondroplasia	01		
Miscellaneous / others	Examphalos major	01	02	25
	Cystic hygroma	01		
Total		08	08	100

Internal anomalies: On internal examination of the 46 fetal and neonatal (perinatal) deaths, 4 babies showed internal congenital anomalies, (Table 5).

Table 5: Internal congenital anomalies.

System affected	Type of anomaly	No.	Total	%
Respiratory system	Bi-lobed lungs	01	01	25
Genito urinary	Polycystic kidneys	01	01	25
Others	Diaphragmatic hernia	01	02	50
	Umbilical cord with 2 vessels	01		
Total		04	04	100

One fetus with congenital anomaly maternal age <21 years. 17% of fetuses with maternal age between 21 to 30 years. 20% fetuses with maternal age between 31 to 40 years have congenital anomaly (Fisher P value = 0.35 = NS).

27% of fetuses of primigravida mothers and 11% of fetuses of gravida 3 mothers and 20% of multigravida mothers were associated with congenital anomalies. (Fisher Exact P value = 0.14; NS). 15% of male and 22% of female cases were have congenital anomaly (Fisher Exact P value = 0.50; NS). 29% of fetus with weight less than 1000 gm and 50% of fetus with weight range b/w 1000-1500 gm. have congenital anomalies and all congenital anomalies have birth weight less than 1500 gm. (Fisher Exact P value = 0.28; NS).

DISCUSSION

Fetal autopsy significantly contributes to the diagnosis of intrauterine fetal death and congenital anomalies are a major cause of perinatal death.[11] Congenital malformations in fetal and neonatal deaths vary in different studies. The study of malformations greatly helpful in genetic counseling and prenatal diagnosis in successive pregnancies. In the present study 46 fetal and

neonatal autopsies were carried out among fetal and neonatal deaths that occurred in the department of obstetrics and gynecology at government maternity hospital Tirupati, during the period from September 2008 to august 2010. In 46 fetal and neonatal autopsies performed 40 were fetal deaths and 6 were early neonatal deaths. Congenital malformations account for 19.56% of fetal and neonatal deaths. This incidence matches with the study by Harsh Mohan et al.[12]

Maternal factors: In present study, the incidence of congenital malformations were higher in mother's age group of 21 to 40 years. In 21 to 30 years out of 24 fetal and neonatal deaths 4 (17%) cases got anomalies. In 31 to 40 years of maternal age group, out of 20 fetal and neonatal deaths 4 (20%) cases got anomalies. Many authors have shown higher incidence of malformations in the babies born to maternal age between 20 to 35 years.[13] The observations in the present study is that most of the cases belongs to primigravida, remaining two cases belong to multigravida. In our study the incidence of congenital anomalies were increased with the increase in maternal age.

Fetal factors: In present study, the incidence of congenital malformations were higher among the low birth weight infants (<1500 gm) in comparison to the normal weight accounting for 9 cases of congenital malformations. The association of low birth weight and malformations has been well documented. Many studies have documented male predominance amongst congenital malformed babies. However, in the present study we observe 2 male babies with congenital malformation and 7 female babies got congenital malformations. This may be due to small sample size. In a five year study on major congenital anomalies in Turkey by Tomtair et al.,[14] there were 183 cases (2.9/1000) of single (or) multiple congenital Anomalies among 63,159 live births. The most common anomalies were related to the nervous system (31.1%), cleft palate and lip (18.6%), musculoskeletal system disorder (14.2%) and chromosomal anomalies (13.1%). Year to year (P <0.01) increases was seen in the live birth prevalence of major anomalous births males comprised 54.1% of anomalous births and are infant was born with both male and female sexual organs. Both genders were found to have greater anomalies related to the nervous system (34.9% of girls and 28.3% of boys) while amongst girls the next most common anomalies were found to be cleft palate and lip (20.5%) and chromosomal anomalies (19.2%) and (P >0.005). In the present study CNS malformations was most common, it accounted for 33.33%. The CNS anomalies occur due to defective closure of Neural tube between the 23rd and 26th day of gestation resulting in anencephaly or meningomyelocele (Figures 1-3). This study coincided with the study of A. G. Tomatir et al. (31.1%),[14] the highest incidence was observed by Chopra and Rao (53.5%).[15] The musculoskeletal system accounted for 16.66% of congenital malformations which coincided with study of Tomtir et al. (14.2%).[14] Genitourinary molformations (8.33%), respiratory system (8.33%) others (33.33%) one case of cystic hygroma, one case of umbilical cord with two vessels, one case of CDH, one case presented with anencephaly with protruding eye balls as external anomaly and diaphragmatic hernia with the liver occupying the left thoracic cavity and the left thoracic contents (heart and lungs) shifted to the right thoracic cavity (Figure 1). In present study one case presented with polydactyly and syndactyly as external anomalies and poly cystic kidneys as internal anomaly (Figure 2). One case showed cystic hygroma with edematous fetus and one case showed bilobed right lung instead of three lobes. One case showed umbilical cord with two vessels. The system wise comparison of congenital anomalies by various authors shown in Table 6-8.

Table 6: Comparison of central nervous system abnormalities by various authors.

Author	%
Arjun Singh et al. (2002)	20.5
P. A. Boyd et al. (2003)	21
James Drife (2008)	14
A. G. Tomatir et al. (2009)	31.1
Present study	33.33

Table 7: Comparison of urogenital system abnormalities by various authors.

Author	%
Arjun Singh et al. (2002)	4.7
P. A. Boyd et al. (2003)	3
James Drife (2008)	9
A. G. Tomatir et al. (2009)	2.3
Present study	8.33

Table 8: Comparison of musculoskeletal system abnormalities by various authors.

Author	%
Arjun Singh et al. (2002)	30.6
P. A. Boyd et al. (2003)	5
A. G. Tomatir et al. (2009)	14
Sexena HMK et al.	33
Present study	16.66

Benefits of autopsy: The direct benefits of autopsy to parents are not limited to refining the risk of recurrence. Even after autopsy, sometimes a definitive final diagnosis cannot be made and information given to parents may cover a range of possible diagnoses. In such cases the storage of fetal samples for possible future genetic analysis provides the hope of an accurate diagnosis (which may have ramifications for the wider family) at a much later date. In most cases in which the scan findings are confirmed parents can gain comfort that their baby had the prenatally suspected condition. The finding of additional malformations, as well as in some cases changing the diagnosis, may be helpful in targeting tests

in a subsequent pregnancy. A wider importance of autopsy is in its value for quality control for prenatal diagnosis, teaching, and research. The decline in autopsy rate and issues surrounding the retention of tissues and organs for diagnostic studies, teaching, and research has been the subject of much debate since the adverse publicity concerning autopsies and organ retention.[16]

Parents should be provided with full information and not be coerced into accepting an autopsy examination. It is important that those advising them at such a sensitive time do not take what may be the superficially kinder route of avoiding detailed discussion about the autopsy. Parents need full information about the potential benefits of the examination, including details both about the procedures involved and about the benefits in providing information about risks of recurrence if they are to make a truly informed decision. This discussion should be with an appropriately trained professional. Our study provides important information for parents. If a termination has been carried out because of anomalies detected by ultrasound scan, by declining an autopsy, parents will remain ignorant of information of recurrence risk.

CONCLUSION

A total of 46 anatomical and histopathological examinations were done among fetal and neonatal (perinatal) deaths that occurred in the department of obstetrics and gynaecology at govt. maternity hospital, Tirupathi during the period from September 2008 to August 2010.

In 46 autopsies performed, 40 (87%) were fetal deaths and 6 (13%) were early neonatal deaths.

Out of 13 autopsies on male babies, 2 had congenital malformation and 33 autopsies on female babies, 7 had congenital malformations.

Congenital anomalies were commonest in the birth weight group of 1000-1500 grams accounting for 9 cases.

Most of the fetal and neonatal deaths due to lethal malformations occurred in the age group of 21 to 30 years (17%), in these group 4 cases had congenital malformations.

In the age group less than 20 years out of 2 fetal autopsies 1 presented with malformation and both the mothers were primigravida.

In more than third gravid, out of four cases received 1 showed congenital anomalies.

Congenital malformations were seen in 9 cases, which accounted for 26 % of perinatal deaths.

A total of 12 congenital malformations were observed in 9 cases.

Malformations of central nervous system like Anencephaly (Figure 1), meningomyelocele (Figure 3) (33.33%) were most common followed by musculoskeletal system achondroplasia (Figure 4), polydactyly (Figure 2) (16.66%), genitourinary system polycystic kidney (Figure 2) (8.33%), respiratory system (bilobed right lung - 8.33%) and others (congenital diaphragmatic hernia 1 case, cystic hygroma 1 case, umbilical cord with two vessels 1 case, examphalos major 1 case).

This study confirms the most number of perinatal deaths occurred in Low Birth Weight and preterm babies. Even though the prenatal ultrasonography reasonably predicts the malformations, fetal autopsy is essential to look for additional malformations. Fetal and neonatal autopsy helps the parents by giving the information regarding recurrence risk of fetal anomaly, so that regular antenatal checkups with specific diagnostic test help to avoid congenital anomalies in subsequent newborn.

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