B D R News

The official newsletter of The Birth Defect Registry of India,
(A unit of Fetal Care Research Foundation)

Volume 7 Issue 1: January & April 2007

Proceedings of the BDR meeting held on 21/04/07

The first meeting of the current year was held on 21st April 07 at the new premises of Mediscan Systems, Chennai. It was heartening to see a sizable number of audiences from member hospitals.

Dr. S. Suresh extended a warm welcome to the members & hoped to have good attendance during the next BDR meetings this year. He acknowledged the members' contribution to the growth & functioning of BDRI for the sixth year in succession. He said that, now we have formed fairly a good network of registries, we have to move on to the second phase of the BDR project. We need to establish the causes for the common birth defects found in India & evolve strategies to prevent them. As already informed, the NTD project supported by the Department of Biotechnology, Government of India has already commissioned in all other selected study sites & FCRF would soon be joining them. Dr.G.Thangavel (Epidemiologist, BDRI) explained the methodology of the study proposed & gathered the inputs from the members for sample collection for Folic acid & Vitamin B_{12} evaluation.

Dr.Suresh thanked the Rotary Club of Madras Metro for sponsoring the posters & brochure on antenatal care & periconceptional Folic acid in vernacular languages as part of creating awareness among the masses. He announced that a set of 2 posters & brochures on Folic acid will be distributed to all members of BDRI & requested the members in turn to display them in their premises for the benefit of the public.

Following the welcome address were the presentation of the Annual Report of Birth Defects statistics Year 2006 by Dr.G. Thangavel & Ms. V.Jayanthi & case presentations from member hospitals. The excerpts of the presentations are given below.

ANNUAL REPORT OF THE BIRTH DEFECTS STATISTICS YEAR 2006

(Dr. G. Thangavel Epidemiologist, Mediscan Systems, Chennai)

Salient features of BDRI report year 2006

- The number of geographic locations representing the sample population of BDRI network has escalated from 12 to 18 in the year 2006. The number of births that were monitored during 2006 has also eventually increased to 1,30,000 from about 70,000 in 2005.
- Data contribution from the Government Institute of Obstetrics & Gynaecology, Chennai, has boosted up the population coverage of births to about ¼ of the total births that occur in Chennai every year.
- Among the registries, the crude birth prevalence of birth defects was highest in Mumbai with 145 per 10,000 followed by Visnagar, Hyderabad, Chennai & the least were from West Godavari.
- Concurrent with previous years, CNS defects were the most prevalent of all systems defects across the regions except in Chennai where Musculoskeletal anomalies were found to be the highest.
- Neural Tube Defect (NTD) was the most commonly found anomaly across all regions. Trichy-Lalgudi BDR reported the highest incidence of NTD.
- The prevalence of major anomalies overall, were 25.9/10,000 of NTD followed by 7.5/10,000 of Congenital Talipes Equinovarus (CTEV) & the least 1.7/10,000 of Renal cystic anomalies.
- Overall incidence of all anomalies were found to be the lowest in Aurangabad & West Godavari registries

BIRTH DEFECTS REGISTRY OF INDIA - ANNUAL REPORT 2006

Introduction

Worldwide the prevalence of congenital malformation is about 2 -3%. In India, though nation wide prevalence estimate is not known, few small hospital-based studies indicate that it would be high. However, there is no systematic surveillance exist for birth defects in India. Having understood the lacunae in this area, Fetal Care Research Foundation (FCRF) established the Birth Defects Registry of India (BDRI) in the year 2001.

This is the sixth successive annual statistical report of BDRI. It presents the birth prevalence of birth defects estimated from 18 regional registries; viz. Chennai, Erode, Trichy, Lalgudi, Madurai, Nagercoil, Ramanathapuram, Dindigul, Coimbatore and Sivakasi in TamilNadu, Hyderabad and West Godavari in Andhra Pradesh, Bangalore in Karnataka, Mumbai, Pune, Akola, Jalgaon, and Aurangabad in Maharashtra and Vis Nagar of Mehsana district in Gujarat. Data from Trichy and Lalgudi were combined as they represent the same geographic area (Administrative district).

Program description

BDRI is a hospital-based descriptive surveillance program, which passively collects (voluntary reporting) data on structural and chromosomal birth defects from hospitals of defined geographic areas. The Dysmorphologist verifies collected data before storing into the database. ICD 10 codes are assigned to all diagnostic terms. Finally, data are statistically analyzed and the yearly annual report is presented to the members.

Results

During 2006 there were 1,29,172, births reported from the member registries. Of which 97.8% were live born. (Table 1). There were 1191 cases with birth defect(s). The over all crude birth prevalence is 92.2/ 10,000. High prevalence was

reported from Mumbai and low prevalence was reported from West Godavari (Fig 1). Though over all CNS anomalies were high, Musculoskeletal anomalies were the leading group of defects in Chennai (Fig. 2). Tables 2A to 2J show the detailed anomaly specific and system specific crude birth prevalence across all registries.

Limitations of the data

Though overall crude birth prevalence is 92.2 per 10,000, it is still underestimated since the expected prevalence is at least 2%. The plausible reasons could be, **a**. Data not population based, (e.g. only 25% of total births are covered by the program in Chennai) **b.** Passive data collection, **c.** Most of the minor anomalies might not have been reported, and **d.** Despite multiple sources of data ascertainment, only a few cases from Neonatologists and Paediatricians were reported. Though the estimated prevalence may not reflect the true population prevalence in those regions, it shows the pattern and type of congenital malformations most likely to occur

Table 1: Frequency of birth categories.

Categories	N	%
Live birth	126334	97.8
Intrauterine fetal death / still birth	2420	1.9
MTP for anomaly	418	0.3
Total births	129172	100

Fig 1: Crude birth prevalence of all anomalies and folic acid preventable anomalies across the registries

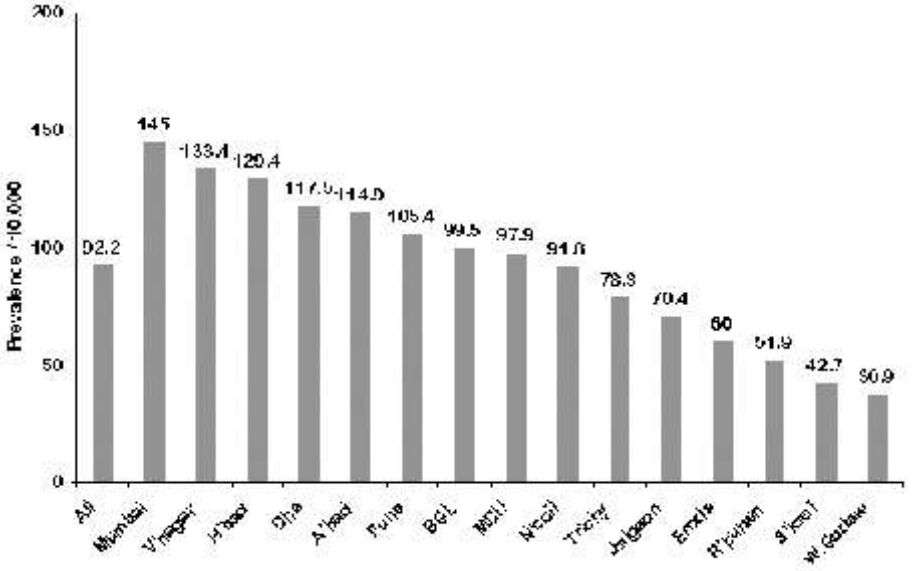


Fig 2: Crude birth prevalence of selected system anomalies across all registries

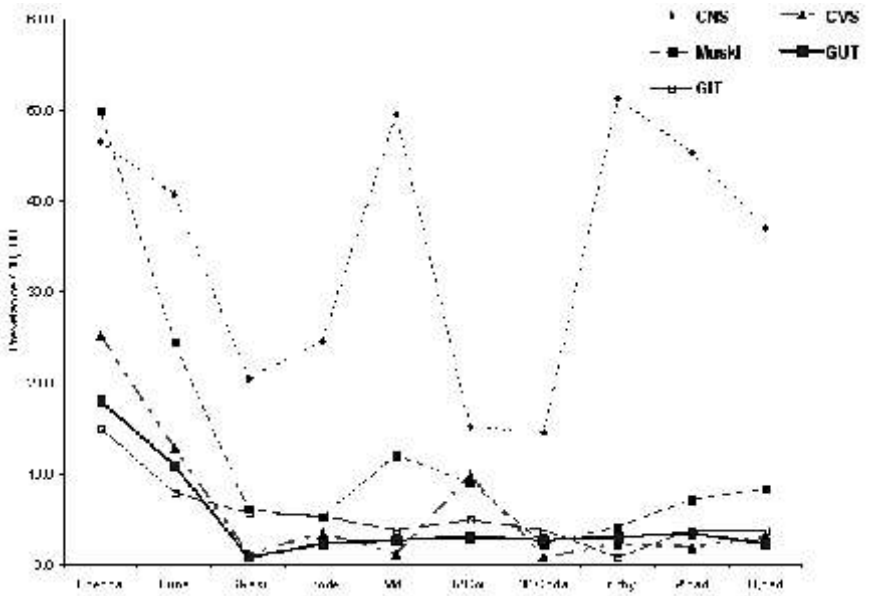


Table 2A-J: Anomaly specific and system specific crude birth prevalence of congenital malformations across all registries

Diagnostic Grouping	Number of cases	Prevalence / 10,000
A. Congenital Anomalies of the Central Nervous System (Q00 – Q07)	**496**	**38.4**
A01 Anencephaly (Q00.0) **xencephaly, Iniencephaly)**	160	12.4
A02 Encephalocele (Q01.0 – Q01.9) **)ccipital Encephalocele/ Meningocele)**	36	2.8
ly (Q02)	14	1.1
A04 Congenital Hydrocephalus without Spina bifida (Q03.0 – Q03.9) **alker malformation, Ventriculomegaly)**	115	8.9
A05 Spina bifida without anencephaly (Q05.0 – Q05.9) **le, Meningomyelocele, Myelocele, Rachischisis, excluding Spina bifida occulta)**	139	10.8
A06 Holoprosencephaly (Q04.2)	16	1.2
A07 All other congenital malformations of brain, spinal cord & nervous system (Q04 & Q06) (Incl. Agenesis of corpus callosum, absence of nerves, cerebral cysts and cerebellar malformations, etc.)	21	1.6

Diagnostic Grouping	Number of cases	Prevalence / 10,000
B. Congenital Anomalies of Eye, Ear, Face & Neck (Q10 – Q18)	**70**	**5.4**
)s / Microphthalmos / Macrophthalmos (Q11.0 – Q11.9)	10	0.7
nal auditory meatus (Q16.1)	1	7.7
(Q17.4)	40	3.1
genital anomalies of Eye, Ear, Face & Neck (Q10 – Q18)	35	2.7

Diagnostic Grouping	Number of cases	Prevalence / 10,000
C. Congenital Anomalies of the Circulatory System (Q20 – Q28)	**182**	**14.1**
uncus / Persistent Truncus arteriosus (Q20.0)	6	0.5
C02 Double outlet right ventricle (Q20.1)	16	1.2
C03 Transposed Great vessels (Q20.3)	10	0.8
C04 Ventricular Septal Defect (Q21.0)	46	3.6
C05 Atrial Septal Defect / Patent or persistent foramen ovale (Q21.1)	20	1.5
C06 Atrioventricular septal defect / Endocardial Cushion Defect / Ostium primum (Q21.2)	6	0.5
C07 Tetrology of Fallot (Q21.3)	5	0.4
C08 Pulmonary valve Atresia (Q22.0)	0	0.0
C09 Ebstein's anomaly (Q22.5)	1	0.1
C10 Hypoplastic right heart syndrome (Q22.6)	2	0.2
C11 Other tricuspid valve abnormalities (Q22.8)	0	0.0
C12 Bicuspid aortic valve (Q23.1)	2	0.2
C13 Hypoplastic left heart syndrome (Q23.4)	13	1.0
C14 Dextrocardia (Q24.0)	3	0.2
C15 Patent ductus arteriosus (Q25.0)	24	1.9

C16 Anomalies of arch of Aorta (Q25.1 & 25.4)	6	0.5
C17 Anomalies of pulmonary artery (Q25.5 – 25.7)	3	0.2
C18 Persistent left superior vena cava (Q26.1)	0	0.0
C19 Single umbilical artery (Q27.0)	14	1.1
C20 Other specified and unspecified congenital heart anomalies (Q20.2, Q20.8, Q22.4, Q23.0, Q23.2, Q24.8, Q24.9 & Q25.8, Q26.2)	25	1.9

Diagnostic Grouping	Number of cases	Prevalence / 10,000
D. Congenital anomalies of the Respiratory system (Q30 – Q34)	**9**	**0.7**
ystic adenomatoid malformation of lung (Q30.0)	5	0.4
alformation of nose (Q30.1 – Q30.9)	7	0.5
resia (Q31.8)	0	0.0
esia (Q32.1)	0	0.0
lung (Q33.6, Q33.8)	0	0.0
atory anomalies	3	0.2

Diagnostic Grouping	Number of cases	Prevalence / 10,000
E. Congenital anomalies of the Gastrointestinal tract (Q35 – Q45)	**178**	**13.8**
Q35.0 – Q35.9)	22	1.7
E02 Cleft lip (Q36.0 – Q36.9)	17	1.3
E03 Cleft palate & cleft lip (Q37.0 – Q37.9)	54	4.2
E04 High arched palate (Q38.5)	10	0.8
E05 Other congenital malformations of tongue and mouth (Q38.2, Q38.3)	5	0.4
E06 Atresia of esophagus without fistula (Q39.0)	10	0.8
E07 Tracheoesophageal fistula with atresia (Q39.1)	1	0.1
E08 Tracheoesophageal fistula without atresia (Q39.2)	13	1.0
E09 Gastric outlet obstruction (Q40.0)	0	0.0
E10 Tubular Stomach (Q40.2)	1	0.1
E11 Absence, atresia and stenosis of small intestine (Q41.0 – Q41.9)	7	0.5
E12 Imperforate anus (Q42.3)	32	2.5
E13 Other Congenital malformations of large intestines (Q42.1)	7	0.5
E14 Meckel's diverticulam (Q43.0)	1	0.1
E15 Anomalies of liver and gall bladder (Q44.0 – Q44.9)	0	0.0
E16 Abscent pancreas (Q45.0)	1	0.1
E17 Anovestibular fistula / Rectovestibular fistula (Q64.7)	2	0.2
E18 Other specified and unspecified gastriointestinal tract (Q43.0 – 43.9)	4	0.3

Diagnostic Grouping	Number of cases	Prevalence / 10,000
F. Congenital Anomalies of the Genital and Urinary Systems (Q50 – Q64)	**149**	**11.5**
alformation female genital organs (Q50.0 – Q52.9)	13	1.0
d testis (Q53.0 – Q53.9)	8	0.6
(Q54.0 – Q54.9)	18	1.4
nital malformations of male genital organs (Q55.0 – Q55.9)	7	0.5
e sex (Q56.4)	17	1.3
F06 Renal agenesis (Q60.0 – Q60.6)	28	2.2
F07 Cystic kidney disease (Q61.0 – Q61.9) (Incl. Infantile or Adult polycystic kidney and Multicystic dysplasia)	30	2.3
F08 Congenital hydronephrosis (Q62.0)	13	1.0
F09 Pelviureteric junction obstruction (Q62.1)	5	0.4
F10 Other ureter anomaly (Q62.4 – Q62.8)	1	0.1
F11 Other congenital malformations of kidney (Q63.0 - Q63.9) (Incl. Fused / Horseshoe kidney)	5	0.4
F12 Ectopia vesicae / Bladder exstrophy (Q64.1)	4	0.3
F13 Congenital posterior urethral valve (Q64.2)	3	0.2
F14 Other congenital malformations of bladder & urethra (Q64.3, Q64.8)	7	0.5

Diagnostic Grouping	Number of cases	Prevalence / 10,000
G. Congenital Anomalies of the Musculoskeletal System (Q65 – Q79)	**220**	**31.6**
G01 Congenital dislocation of hip (Q65.0)	0	0.0
G02 Talipes equinovarus (Q66.0)	97	7.5
G03 Other Congenital malformations of feet (Q66.1- Q66.9) (Incl. Rocker bottom foot)	2	0.2
G04 Congenital Musculoskeletal deformities of head, face, spine & chest (Q67.0 – Q67.9) Incl. Dysmorphic face (Q67.0)	12	0.9
G05 Congenital deformities of knee (Q68.2) Genu recurvatum	6	0.5
G06 Polydactyly (Q69.0 – Q69.9)	39	3.0
G07 Syndactyly and polysyndactyly (Q70.0 – Q70.9)	11	0.9
G08 Upper limbs - reduction defects / shortening (Q71.0 – Q71.9)	23	1.8
G09 Lower limbs - reduction defects / shortening (Q72.0- Q72.9)	11	0.9
G10 Unspecified limbs - reduction defects / shortening (Q73.0 – Q73.8)	12	0.9
G11 Arthrogryposis (Q74.3)	5	0.4
G12 Other congenital malformations of limbs (Q74.8 & Q74.9)	15	1.2
G13 Hypertelorism (Q75.2)	32	2.5
G14 Other congenital malformations of skull & face bones (Q75.0– 75.9)	37	2.9
G15 Spina bifida occulta (Q76.9)	1	0.1

G16 Other congenital malformations of bony thorax and spine (Q76.0 – Q76.8) (Incl. Scoliosis, Hemivertebre etc)	23	1.8
G17 Osteochondrodysplasia with defects of growth of tubular bones & spine (Q77.0 – Q77.9)	15	1.2
G18 Osteogenesis imperfecta (Q78.0)	3	0.2
G19 Diaphragmatic Hernia (Q79.0)	36	2.8
G20 Absence / Eventration of diaphragm (Q79.1)	3	0.2
G21 Exomphalos / Omphalocele (Q79.2)	41	3.2
G22 Gastroschisis (Q79.3)	7	0.5
G23 Thanatophoric Dysplasia (Q77.1)	5	0.4
G24 Other congenital malformations of abdominal wall (Q79.5, Q79.8) (Incl. Limb body wall complex, Cloacal anomaly)	21	1.6
G25 Other specified and unspecified congenital malformations of musculoskeletal system	2	0.2

Diagnostic Grouping	Number of cases	Prevalence / 10,000
H. Other Congenital Anomalies (Q80 – Q86 & Q89)	**10**	**0.8**
H01 Icthyosis (Q80.8)	0	0.0
H02 Congenital hypothyroidism (Q89.2)	0	0.0
H03 Simian crease (82.8)	9	0.7
H04 All other congenital malformations not elsewhere classified (Q82.3, Q89.4, Q89.9)	2	0.2

Diagnostic Grouping	Number of cases	Prevalence / 10,000
I. Multisystem Anomalies / Syndromes	**20**	**1.5**
I01 Meckel Gruber Syndrome (Q61.9)	3	0.2
I02 Pierre Robin syndrome (Q87.0)	5	0.4
I03 Sirenomelia sequence (Q87.2)	6	0.5
I04 VACTREL (Q87.2)	3	0.2
I06 Other Syndromes (Q75.1, Q87.3, Q87.5, Q87.9)	3	0.2

Diagnostic Grouping	Number of cases	Prevalence / 10,000
J. Chromosomal Anomalies (Q90)	**23**	**1.8**
J01 Down's Syndrome (Q90.0 – Q90.9)	14	2.2
J02 Edwards' Syndrome (Q91.3)	3	0.6
J03 Pautau's Syndrome (Q91.7)	0	0.0
J04 Other Syndrome (Q96.0, Q99.1, Q99.8)	6	0.4

Discussion

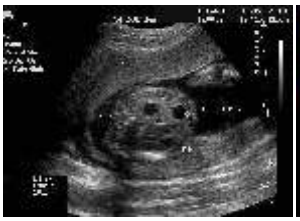
It was suggested that the members may be issued copy of the statistics much prior to the annual meeting to facilitate better understanding & detailed discussion after the presentation is over. Dr. Suresh hoped that the Folic acid project would help us understand ultimately the efficacy of administering periconceptional folic acid as a preventive measure to reduce Neural tube Defects & other folic acid deficiency related birth defects in our population

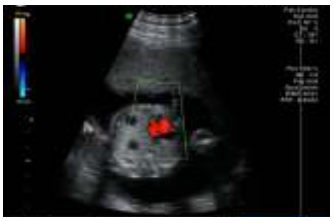
CONGENITAL CYSTIC ADENOMATOID MALFORMATION (CCAM) OF LUNGS

(Dr. Sonali Sood, Assistant Professor, OBGYN, Sri Ramachandra

Dr. Sonali Sood commenced the second session of the day with a case presentation of a correctable congenital anomaly namely CCAM. A 22 years old, non consanguinously married primi mother was scanned at 20 weeks. Her USG revealed, 20 - 21 weeks of single intra uterine gestation with CCAM in left lung with mediastinal shift. There was no evidence of hydrops & the liquor was normal.

The pregnancy was closely monitored with weekly ultrasounds at 24,28,32 & 36 weeks. At 32 weeks the size of the cysts were found to have reduced in size when compared to previous scans. At 36 weeks there was further reduction in the size of the cysts & the liquor was normal throughout. Since the problem required a multi disciplinary approach, the patient was counseled & the team of Neonatologist & Paediatric Surgeon were informed. The team had planned to intubate the baby in case of emergency after birth. At 38 weeks, mother had spontaneous onset of labour & the child was delivered normally. The male child weighed 3.3 kilograms with good APGAR & did not have any respiratory distress. He was kept in NICU for observation. The baby was discharged later with the advice of CT scan at 6 months & 1 year of age or earlier if there is any evidence of respiratory infection. The child presented with repeated respiratory infection during the first year of life, but there was no indication for lobectomy.



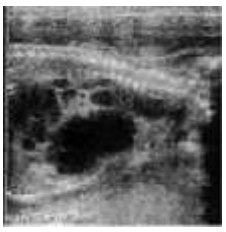


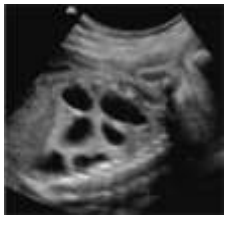
Dr. Sonali then dealt in detail about the literature of CCAM. It is **defined** as an adenomatoid increase of terminal respiratory element (bronchioles) leading to development of pathological mass consisting of multiple cysts of different sizes.

The lesion consists of cystic and solid tissue. This is most frequently identified mass in fetal chest accounting for 25% of congenital malformation of lungs. It is mostly unilateral (<2% bilateral) & most of the times one lobe/segment/part of the lobe is involved. It is seen very rarely in the entire area of the lungs.

According to Stocker, Madewell & Drake classification CCAM is classified in to 3 types depending on the size of the malformation.

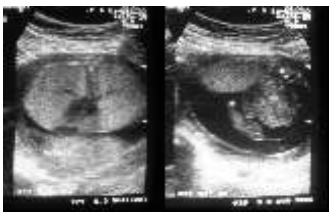
Type I CCAM is found in 50% of cases and it consists of variable cysts with at least one dominant cyst > 2cm in diameter (3 - 7cm). Less than 5% of this kind is associated with other anomalies and has excellent prognosis after correction. The fibrous septa containing mucous cells are responsible for areas of echogenicity within the mass in this condition.





Type II CCAM is found in 41% of cases and it consists of smaller & more uniform cysts up to 2cm diameter (1.5 - 2cm). Half of them have associated anomalies of renal/intestinal/cardiac & skeletal systems. Absence of mucous producing cells result in the formation of clear cysts in this condition.

Type III CCAM is found in the rest of 9% consisting of microcystic lesions.(0.30 - 0.5mm). These small cysts cannot be resolved individually. They appear as a single homogenously echogenic mass & has a ground glass appearance on high resolution CT scan. It is usually associated with other anomalies causing fetal hydrops & polyhydramnios resulting in poor prognosis of the fetus.



The **Differential Diagnostic** conditions include, Congenital Diphragmatic Hernia. Neuroenteric Cyst & Esophageal duplication. If the mass is predominantly solid it denotes microcystic CCAM or sequestration.

Prognostic Factors include mainly the presence or absence of hydrops & polyhydramnios. Hydrops occurs in 45% of the cases, which has a fetal & postnatal mortality rates of 68-89%.In the absence of hydrops mortality is < 10% & with polyhydramnios the mortality is 50%.

Postnatal management: An experienced Neonatologist & Pediatric Surgeon are required to postnatally manage the baby well. Symptoms arise due to compression of the normal lung leading to inflation with abcess formation.Spontaneous pneumothorax rarely occurs. 60% of cases develop symptoms within a month, 10% within 6 months & 15% within 6 - 14 months. A few cases remain asymptomatic throughout & sometimes it is picked up on a routine adult X ray as an incidental finding.

Diagnostic evaluation is done mostly through Chest X ray. Doppler USG is done to confirm the diagnosis and to detect anomalous blood supply.CT scan is helpful when surgery is planned.

Treatment consists of resection of the affected lobe / lobes. Children who are asymptomatic development recurrent. Infections in the cysts and later require resection. Rhabdomyomain childhood can give rise to CCAM.

In-utero intervention is sometimes opted for macrocystic adenomatoid malformations. Transuterine aspiration of the cyst is sometimes done, but the cysts re-expand rapidly necessitating repeated aspirations in some cases pigtail tube is placed to form a shunt between cyst and the amniotic fluid space. However these approaches have been questioned since it has been proved that some cystic even solid, malformations may spontaneously regress in size even to the point to which they are not detectable after delivery. (Ref. James & March - Textbook of Paediatric surgery)

Genetic counseling facilitates informed choices of continuation / termination of pregnancy. This also provides better understanding of the condition and its prognosis, surgical intervention and its economic implications and the need to have a good family support.

Soon after this case presentation, there was a short discussion.

How can an anatomical malformation suddenly disappear as in the above case without leaving any evidence?

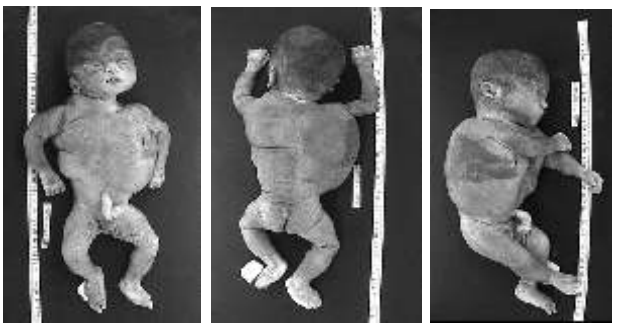
To this, Dr. S. Balagopal, Paediatric Surgeon (SRMC Hospital & RI) gave an explanation. He said that lung being a cystic organ develops rapidly in stages. Sometimes it persists in cystic glandular/alveolar phase beyond a period, which may result in cystic malformation like CCAM. He compared this condition to hydronephrosis where one would wait for its spontaneous regression in the postnatal period. The same way there are chances for the lung cyst to regress initially and show up later in which case lobectomy is the only solution offered to correct the defect.

Is CT warranted to diagnose CCAM after birth?
A series of X rays & the expertise of a Paediatric Radiologist are needed to pick up the cysts during postnatal period. CT scans are done to confirm the anomaly and to plan for surgical correction. Therefore X rays backed by CT would be ideal in this situation. When the child with CCAM develops an infection later, CT would be more useful. Even if the initial one does not reveal the cyst, it should be repeated again to diagnose the problem.

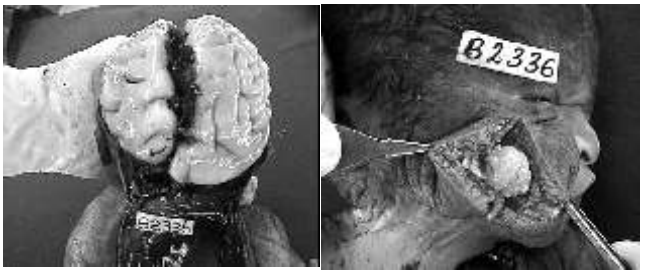
A RARE DISORDER

(Dr. K. Vijaya, zonal officer, Saidapet Corporation Hospital, Chennai)

Dr. K. Vijaya presented a rare case of Proteus Syndrome at the meeting. Mrs. D, nonconsanguinous marriage, primi, aged 24, with no significant family history, was referred for a scan. Her USG showed single intra uterine gestation of 28 weeks with a cystic mass around the thorax, abdomen and neck with ventriculomegaly. The liquor was normal & the placenta posterior. The speaker commented that it was unusual to see a fetus that seemed to have a float around the neck. She was referred for expert opinion where the fetus was diagnosed to have Unilateral Ventriculomegaly,? Agenesis of Corpus Callosum, not imaged cavum septum pellucidum, Echogenic solid mass between lips more to the right - ? Haemangioma / Lymphangioma & multiseptated cystic mass seen on both sides of the neck, thorax and upper limb. The parents' were counseled regarding the poor prognosis of the fetus and they decided to terminate the pregnancy. They also consented for detailed postmortem examination of the fetus. The fetus was delivered by vaginal induction at 29-30 weeks. It was a male child, weighed 1.75 kg & died after an hour.



The autopsy findings were
1) Cystic Hygroma arising on left side of sternum encircling whole thorax & abdomen up to right side of sternum & over left upper arm & forearm seen with café au lait spots



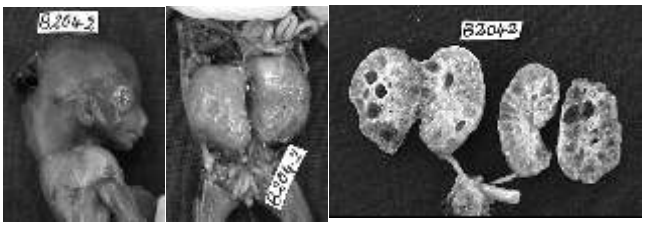
2) Lipoma cheek 3) Asymmetry of face with beaked nose& Flared nostrils 4) Asymmetrical Cerebral Cortex, Agenesis of Corpus Callosum & 5) Dysmature placenta with focal haemorrhage & sub chorionic fibrin. All of these features were consistent with the diagnosis of **Proteus syndrome**.

Talking about the genetic basis of the syndrome, Dr.Vijaya said that it is a sporadic condition caused by somatic mosaicism for a dominant lethal gene for which the locus is yet to be identified. PTEN germ line mutation contributed to 20 - 50% of occurrence of this anomaly. The researchers have proposed, transmission from father to son & mother to son. The **incidence** is less than 1/10,00,000 live births. There are about 100 - 200 cases of Proteus syndrome worldwide. It is not race / sex specific. The speaker described in detail a number of differential diagnostic such as Klippeltrenaunay Weber syndrome, Russel Silver Dwarf syndrome, WAGR syndrome & Wiedmann Beckwith syndrome. She also presented the picture of a 22 years old female with Proteus presenting macrodactyly, lipoma on the palm & forehead. She concluded her lecture stating that this condition warrants genetic counseling & serial scans in subsequent pregnancies.

MECKEL GRUBER SYNDROME

(Dr. Sheela Gobinath, Consultant Paediatrician, Saidapet Corporation Hospital, Chennai)

Dr. Sheela Gobinath presented a case of multiple system anomaly. Mrs.V with III degree consanguinity, aged 22 years, $G_3P_1A_1$ was scanned for third pregnancy. Her second pregnancy was a preterm delivery at 8 months, and the baby had ? Encephalocele & lateral eversion of both feet. In view of bad obstetric history, she underwent first trimester screening & it was negative. H**er** USG showed single gestation of 12 - 13 weeks with both the kidneys appearing prominent & enlarged for the gestational period. She was referred for expert opinion & the USG again showed 14 weeks of gestation with multicystic kidneys, occipital encencephalocele& oligohydramnios. The couple was counseled and they opted to terminate the pregnancy, as the prognosis was poor. Autopsy examination of the fetus was also suggested. Autopsy confirmed the USG findings which were consistent with the diagnosis of **Meckel Gruber syndrome** (MGS).



Dr. Sheela went on to elaborate the literature of the syndrome. She said the **incidence** rate of MGS is 1 : 13,250 to 1,40,000. This autosomal recessive condition is not sex specific & the mortality rate is 100%. The triad features, cystic renal dysplasia, occipital encephalocele & post axial polydactyly are the classical diagnostic criteria for the syndrome. 2/3 of the manifestations are seen in most number of cases. MGS has a large **genetic heterogenecity,** for instance MKS I gene in Finnish population is mapped to 17q21-q24, telomeric to homeobox B region. MKS 2 has been mapped to 11q13 in a subset of Middle Eastern & North African families. MKS3 has been mapped to 8q24. Polydactyly appears to be less common in MKS3 linked families when compared to the other two linkages. The **differential diagnoses** for MGS are Trisomy 13,Bardet Biedal syndrome, Joubert's syndrome & Smith Lemli Optiz syndrome type II where polydactyly seems to be the common feature. MGS has a **25% recurrence risk** & close monitoring during the antenatal period with I or II trimester screening are warranted. The speaker concluded saying that in the above case, the previous preterm baby, could have had MGS. However, autopsy in this pregnancy helped to confirm the diagnosis and therefore the risk prediction & management in subsequent pregnancies became easier.

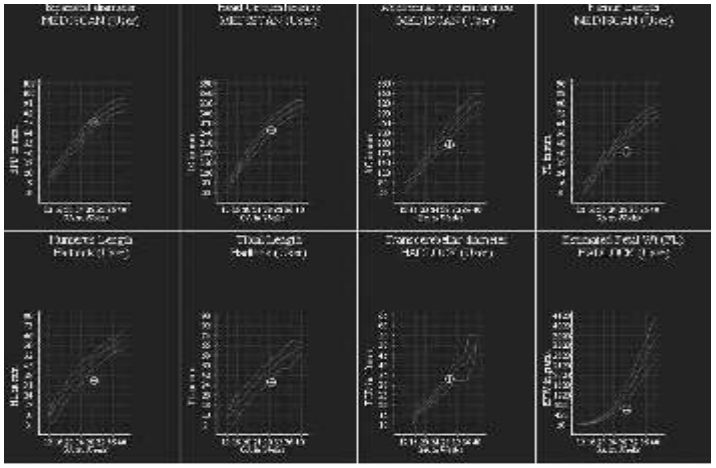
*APPEARANCES A*RE DECEPTIVE

(Dr. Radhika Ramesh, Fetal Medicine Specialist,
Dr. Lathaa Bhat, Associate Dysmorphologist, FCRF, Chennai)

Dr. Radhika Ramesh & Dr. Lathaa Bhat discussed about 2 interesting cases with common findings on routine USG which ended up with uncommon chromosomal findings on detailed investigations.

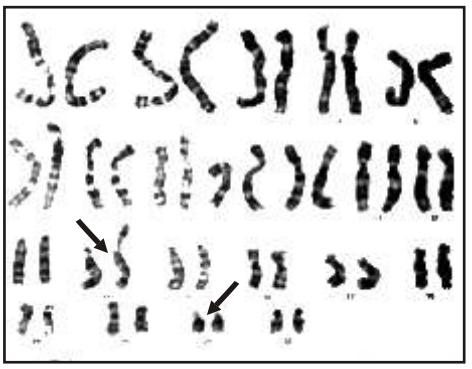
Dr. Lathaa Bhat began with a case of 25 year old primi who was short statured (147cm tall) and had mild dysmorphic features with sub optimal intelligence. Her family pedigree chart revealed short stature in the wife's maternal aunt & grandmother's two sisters. One paternal aunt had primary amenorrhoea & died in her early 50s.

Dr. Radhika Ramesh explained about the USG findings of this case. It was a single intrauterine gestation of 29 30 weeks with all long bones & HC, AC falling below 5th centile, femur length < 4SD, normal contour & echogenecity of long bones, poor mineralization of calvarium, thoracic circumference in 40th centile& penoscrotal hypospadias. The liquor & Doppler study were normal. The parents were informed about the fetus having ?IUGR secondary to chromosomal abnormality or ? Short Limb Skeletal Dysplasia during counseling session as the diagnosis was not conclusive.



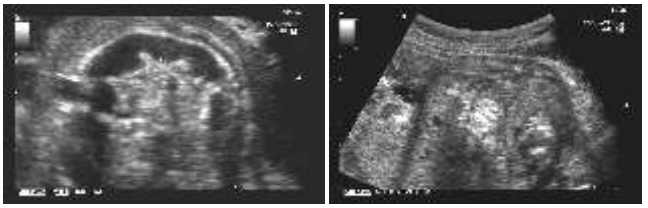
Dr.Lathaa commented, that this case without a precise diagnosis was quite challenging and Fetal blood sampling was done at 30 weeks to rule out chromosomal abnormality. The result obtained provided an answer to the unsolved diagnosis.

Robertsonian translocation 14 & 21

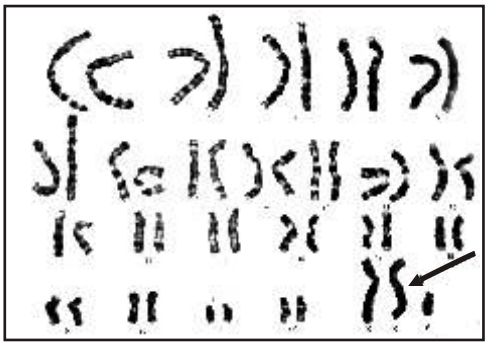


The karyotype showed 14 & 21 Robertsonian Translocation in the fetus. Since the pregnancy was already at 30 weeks, guarded prognosis was given for the fetus. Parental karyotyping & postnatal follow up & supportive therapy were advised.

Dr. Lathaa Bhat went on with the second case presentation of another 25 year old primi mother who was referred for second opinion to the centre. Her USG findings were explained by Dr.Radhika Ramesh. It showed a fetus at 24 - 25 weeks gestation, echogenic small bowel with few loops dilated, thickening of the walls of the loop, collapse of a few loops ? obstruction & placental thickness of 3.5cm.The liquor, Doppler & growth were normal.



This case again bore the possibilities of a Chromosomal anomaly, small bowel atresia, infective lesion & a single gene disorder - Cystic Fibrosis. Mother did not report of infection, fever, rash or PIH during counseling session. Her husband had dolicocephaly & a large head. Husband's mother was short -140cm & had a short neck. Infection screen, mutation for delta 508 gene & karyotype were advised. Both infection screen & gene mutation reports were negative. Karyotyping report was abnormal with 47, XXX chromosomes suggesting **Klinefelter syndrome**.



Klinefelter syndrome is known to have behavioral disturbances, tall stature,feminine changes during adolescence, azoospermia & infertility, mild to borderline mental retardation. Echogenic bowel was reported in isolated cases & commonest trisomies seen are Trisomy 21,18 & 13.The parents were counseled regarding the postnatal implication of this problem. It was explained that this has < 1% recurrence risk. The parents in both the cases discussed above opted to terminate their pregnancies. The speaker ended the presentations with a punch saying that appearances are deceptive sometimes even if expertise is exercised. Common findings remain common but rare features need to be kept in mind to deal with special cases. This also necessitates individualistic & detailed counseling.

An overview of the NTD (Neural Tube Defects) project sponsored by the Department of Biotechnology (DBT), Government of India

The initiative taken by the DBT, Government of India would throw some light on the causative factors of neural tube defects. This would facilitate a better understanding of the problem in our population & only then the Government could evolve appropriate strategies to prevent them to the best extent possible.

Title - Study of G**enetic susceptibility** to neural tube defects and its association with M**aternal vitamin B_{12} and Folate status**

Duration : Three years
Funded by : Department of Bio-Technology (DBT), Government of India
Type : Multicentric study

Participating centers

KEM Hospital and Research Centre, Pune
Principal Investigator - Koumudi Godbole
Co - Principal Investigator - Dr. C. S. Yajnik

Centre for Cellular & Molecular Biology, Hyderabad
Co - Principal Investigator - Dr. G. R. Chandak

Fetal Care Research Foundation, Chennai
Co Investigator - Dr. S. Suresh,

Foundation for Research in Genetics & Endocrinology, Ahmedabad
Co Investigator - Dr. Jayesh Sheth

Study Design

The study involves **2 controls (A&B)** and one **case.**

Case - Baby with an isolated open **NTD**
Control A - **A**bsolutely normal baby with no family history of NTD
Control B - **B**aby with an anomaly that is not related to Folic acid metabolism.

Objectives

To investigate the association between maternal folate and vitamin B_{12} status in mothers and NTD in the offspring.
To investigate the association between maternal/paternal and fetal genotype for selected genes and NTD

Expected outcome

Better understanding about Gene - Nutrition and Gene - Gene interaction, that may contribute to the etiology of NTD in India.

Sample size

500 NTD cases and 1000 controls from all selected sites.

Samples needed

1. 10 ml whole blood from both the parents of the controls & the case
2. Fetal tissue from the affected NTD case.
3. 20 ml cord blood from the control baby

Confidentiality

This study ensures the subjects involved absolute confidentiality of the information gathered.
Samples are drawn only after imparting appropriate information and obtaining consent from the subjects.

BDRI

&

Rotary Madras Metro Dt 3230

Partnership Program for Birth Defects Prevention

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