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Fusion of vertebrae at various sites: An embryological and clinical relevance

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Introduction: Skeletal abnormalities related to vertebral column is important, as a part of axial skeleton whole body weight be transmitted through it. Also acts as lever for movement of appendicular skeleton, connected through muscles. For this reason various sites of vertebral assimilation is focused in present study.

Materials and methods: Three cases are considered (i) complete fusion of fifth lumbar vertebra with sacrum, sacralization (commonest); (ii) complete fusion of atlas with occipital bone occipitalization of atlas (rare); (iii) partially fused typical cervical vertebrae, vertebra critica or block vertebrae (rarest). Congenital sacralization, occipitalization of atlas and block vertebrae can be explained as partial or complete disruption of merging process of caudal and cranial segments of sclerotomes.

Result: Decreased mobility at L5/S1 result in biomechanical changes and altered weight distribution increases stress on the muscles in the region of lumbosacral and sacroiliac joint represents with low back pain with radicular symptoms.

Conclusion: Anomalies of cervical region could be congenital or acquired. Its association to syndrome is not uncommon, like with chorda dorsalis, kippelfiel syndrome, Arnold chiari malformation, syringomyelia and other neuropathology because of its relation to adjacent structures. Thus it may interest anatomist, radiologist, anaesthesiologist, orthopedists neurologist, neurosurgeons and even orthodontist.

Conflicts of interest

The authors have none to declare.

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Glomerular developmental chronology in human fetuses kidney

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Introduction: In foetal life the glomerulus of cortical region shows many developmental changes. Normal histology of the fetal glomerulus at various stages of development was studied to get insight into the morphology of fetal glomerulus. Glomerular study is necessity for correlation with increase in gestational age and pathological changes for normal functioning of kidney in fetal life.

Method: Dissection of 70 normal human fetuses was done and histological findings of glomerulus were noted with respect to the age of fetus. The histology of fetal kidney was studied using H & E stain. Important developmental stages of glomerulus were studied.

Result: Fetal kidney glomerulus histology is different from adult. Unlike in adult kidney, foetal kidney glomerulus shows many developmental stages as v, c, s and crescentic in starting phase. Multiple rows arrangement in between medullary rays with well developed mature glomeruli at juxtamedullary junction. Capillary invagination with developed juxtaglomerular apparatus was appreciated. Nephrogenic zone which was found as broad band in early gestational weeks was disappeared near term.

Conclusion: The present study will be helpful in understanding the normal histological architecture of foetal kidney glomerulus and add to the existing knowledge regarding development of foetal kidney, its relation with gestational age and pathogenesis.

Conflicts of interest

The authors have none to declare.

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Overview study of non immune hydrops fetalis (NIHF) and its prenatal management

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Introduction: Hydrops fetalis is a Greek term that describes pathological fluid accumulation in fetal soft tissues, serous cavities like pleural and pericardial, scalp and body wall.

Hydrops fetalis is a prenatal form of cardiac failure, broadly divided into two groups, immune hydrops fetalis (IHF) and non immune hydrops fetalis (NIHF). IHF is caused by erythroblastosis fetalis secondary to Rh isoimmunization. IHF has decreased markedly up to less than 20% and most of the cases of hydrops fetalis about 90% are NIHF. Our main aim is to study NIHF in detail.

Materials and methods: The present study was conducted over a period of one year among 1000 live births with 100 stillborn fetuses and abortuses. NIHF fetuses were sent to the department of anatomy for academic study.

Results/observations: We report two cases of non immune hydrops fetalis of 16–18 weeks of gestation.

Discussion/conclusion: Edith Potter in 1943 described NIHF. Pathophysiology of NIHF is imbalance in regulation of fluid movement b/w the vascular and interstitial spaces. The most common etiology of NIHF includes cardiovascular, chromosomal and hematologic abnormalities.

Routine ultrasound has been recommended as the initial diagnosis of NIHF. The prognosis depends on etiology and gestational age.

Conflicts of interest

The author has none to declare.

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Teratogenic effect of propylthiouracil on Swiss albino mice

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Aims and objective: To study the teratogenic potential of propylthiouracil on developing vital organs in Swiss albino mice.

Material and methods: The drug was given orally in a dose of 150 mg/kg/day from 6 to 8th day of gestation to pregnant Swiss albino mice. Similarly, distilled water was used as vehicle in control group. The pregnant mice were sacrificed on 18th day of gestation by cervical dislocation and the foetuses were dissected out by uterotomy. The vital organs (i.e. liver, kidney, brain and placenta)

were dissected out, weighed and observed for gross malformations, followed by photography. Finally, the vital organs were fixed in 10% formalin up to 48 h for further microscopic studies.

Result: On macroscopic examination, there were reduction in size and weight of the various vital organs of treated group. The microscopic findings of treated liver showed destruction of parenchyma along with dilated central vein and sinusoids, while treated kidney showed destruction and degeneration of cortical and medullary cellular structures. The treated brain showed dilated ventricles, damage of ependymal lining, degeneration of choroid plexus and oedematous changes in cortical and sub-cortical zones. The treated placenta showed degeneration of various zones, degenerated trophoblastic cells and sinusoids.

Conclusion: Propylthiouracil shows degenerative effect on various vital organs when given during period of organogenesis, so it should be cautiously used in first trimester of pregnancy.

Conflicts of interest

The authors have none to declare.

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A fetal study of craniorachischisis, with emphasis on prenatal diagnosis and prevention

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Introduction: Central nervous system (CNS) malformations constitute a sizeable percentage of the total incidence of the congenital malformations second only to cardiac malformations. Failure of fusion of cephalic part of neural tube is known as exencephaly and caudal part of neural tube is Spina bifida. Therefore emphasis was based on prenatal diagnosis and prevention.

Materials and methods: The present study includes 2000 live births in a period of 2 years with 100 stillborn foetuses and abortuses to elucidate craniorachischisis. The fetuses were sent from the Department of Obstetrics and Gynaecology KAMS&RC. The detailed study of these foetuses was done after fixing with formalin and the findings were appropriately documented and photographed.

Results: The three unclaimed foetuses were female, of which two were craniorachischisis totalis of 40 weeks and 23–25 weeks and the other being craniorachischisis with an omphalocele of 26–28 weeks.

All these fetuses showed presence of anencephaly with extension of defect to the thoracic and lumbosacral region.

Discussion: Neural tube defect (NTDs) is an embryonic induction disorder which results from failure of formation of both mesoderm and neuro-ectoderm. The reduction of 50–70% of NTDs following peri-conceptional folic acid administration initiated series of clinical studies by number of authors. In conclusion most NTDs are sporadic and both genetic and non-genetic environmental factors are involved in its aetiology.

Conflicts of interest

The author has none to declare.

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A study on anencephaly and associated anomalies at a tertiary health care center

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Introduction: Anencephaly is a neural tube defect that occurs in 1–8 births in every 10,000 births in various populations in world. Infant organ transplant has led to renewed interest in study of anencephaly.

Aim: Current study was performed to find out associated abnormalities of anencephaly and their relative frequency.

Materials and methods: Study was performed on 30 fetuses of less than 20 weeks gestation obtained from Department of Gynecology and Obstetrics at Pt. B. D. Sharma PGIMS Rohtak. Fetal autopsies were performed to find out the spectrum of anomalies in each fetus included in study.

Results: Anencephaly was found in 50 percent of cases in study. External ear malformations were found associated with 53 percent cases. Proptosis was most common associated anomaly observed in 46 percent of cases of anencephaly. Meningomyelocele, Spina bifida, curvature anomalies of spine and neck maldevelopment were observed in 40 percent of cases. Liver anomalies and lung anomalies were found in 26 percent of cases. 20 percent cases were associated with congenital talipse equino varus (CTEV). Gastrointestinal tract anomalies associated with anencephaly included duodenal atrasia and stomach hypoplasia.

Conclusion: External ear malformations and proptosis are most common malformations associated with anencephaly whereas spina bifida, meningomyelocele, and curvature anomalies of spine are other common associations of anencephaly.

Conflicts of interest

The authors have none to declare.

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Gross morphological features of human placenta from control and gestational diabetic mothers

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Aim: Gestational diabetes mellitus (GDM) is an ever increasing threat in Indian women, found up to 10% of the total pregnancies and is mainly due to diet, obesity and sedentary life style. Placenta is the vital organ of intrauterine life, forms the picture of whole pregnancy. The present study has undertaken to observe the morphological changes of GDM and control placenta.

Material and methods: Total number of 110 placentas, out of which 55 are GDM and 55 from control were procured for the present study along with mother's age, gestational age and baby's weight. All samples were studied morphologically and histologically.

Result: The morphological aspects of GDM were found be more significant when compared to normal. In GDM placentas, mean placental weight was 537.27 ± 131.97 with a range of 330–890 g, mean placental volume was $482.61 \pm 142.17\ ml^3$ in GDM with