Healthy Babies to Healthy Mothers

ESTD 1989

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talkBACK

NEWSLETTER OF THE INDIAN SOCIETY FOR PRENATAL DIAGNOSIS AND THERAPY

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Editorial

Dr. Veronica Arora

In the rapidly evolving landscape of genetic science, the ability to predict and potentially mitigate the impact of birth defects through genetic testing stands as a beacon of hope for countless families. Yet, this beacon shines amidst a fog of ethicalconcerns that challenge our values, principles, and the very essence of our humanity. As we delve into the moral complexities of genetic testing for birth defects, it becomes imperative to navigate this labyrinth with a keen sense of responsibility, empathy, and foresight.

At its core, the appeal of genetic testing for birth defects lies in the promise of prevention and preparedness. For prospective parents, the knowledge gained from these tests can inform decisions about treatments that might reduce the severity of certain conditions, or even about the viability of a pregnancy. This information can be empowering, offering a semblance of control over what may seem like insurmountable genetic odds. It can prepare families psychologically and financially for the care and support a child with a birth defect might require, enabling a better quality of life for all involved.

However, the power to predict and select based on genetic information opens a Pandora's box of ethical dilemmas. One of the most contentious issues is the potential for genetic testing to veer into the realm of eugenics, subtly shifting from a tool for preparation to a mechanism for selection. The distinction between preventing suffering and pursuing an ideal of genetic 'purity' or 'normalcy' can become blurred, raising profound questions about the value we place on different lives and the diversity of the human experience.

Central to the ethical deployment of genetic testing is the principle of autonomy and the right to informed consent. Prospective parents must be fully informed about the implications, limitations, and potential outcomes of genetic testing. This includes understanding the probability of false positives or negatives,the psychological impact of knowing one's genetic vulnerabilities, and the societal pressures that might influence decision-making. The choice to undergo testing, and what to do with the results, should lie firmly in the hands of those directly affected, free from coercion or judgment.

The widespread availability of genetic testing for birth defects also raises concerns about societal implications, particularly regarding stigma and discrimination. There is a real risk that individuals with certain genetic conditions could be viewed as less valuable or desirable, exacerbating existing prejudices and inequalities. Furthermore, the normalization of genetic testing could lead to a society where the decision not to test, or to proceed with a pregnancy despite the risk of birth defects, is met with moral condemnation or societal pressure.

Navigating the ethical landscape of genetic testing for birth defects requires a nuanced, multifaceted approach. At the heart of this approach must be a commitment to respect for persons, ensuring that autonomy and informed consent are upheld above all. Equally important is the principle of justice, which demands that access to genetic testing and the subsequent care needed for any resulting conditions be equitable, regardless of socioeconomic status.

Moreover, we must foster a culture of inclusivity and acceptance, where diversity is valued, especially in our Indian and the worth of an individual is not measured by genetic 'perfection'. This involves public education to dispel myths and reduce stigma, as well as policies that protect against discrimination based on genetic information.

Editorial

The ethical considerations surrounding genetic testing for birth defects are complex and multifarious, reflecting the broader challenges of integrating advanced genetic technologies into our lives. While the potential benefits are significant, they must be weighed carefully against the moral, psychological, and societal costs. As we chart our course through this ethical labyrinth, let us be guided by compassion, respect for human dignity, and a steadfast commitment to equity and justice. Only then can we harness the full potential of genetic testing in a manner that enriches, rather than diminishes, the human experience.

In the era of easily available genetic tests which result in variants on the report whose pathogenicity can very often be uncertain. The interpretation of such variants requires expertise and experience. Thus, the benefit of genetic testing should be utilised in an accurate and positive manner.

Editorial Board

INDIAN SOCIETY OF PRENATAL DIAGNOSIS & THERAPY

Foreword

Dear Esteemed Colleagues,

We hope this message finds you well and thriving in your endeavours within the field of prenatal diagnosis and treatment. As we embark on a new year filled with promise and innovation, we are delighted to share some exciting updates and developments from the Indian Society of Prenatal Diagnosis and Treatment (ISPAT) in this newsletter.

As healthcare providers dedicated to ensuring the well-being of our patients and their unborn children, we recognize the importance of staying informed about advancements in prenatal testing and diagnosis. Prenatal care plays a crucial role in identifying potential health risks and providing appropriate interventions to promote optimal outcomes for both mother and baby.

In recent years, prenatal testing and diagnosis have seen remarkable progress, offering us unprecedented insights into fetal health and development. These advancements empower us to detect, manage, and sometimes even prevent certain congenital conditions, thereby enhancing the quality of care we deliver to expectant families.

It is essential for us, as healthcare professionals, to remain abreast of the latest technologies and methodologies in prenatal testing. At ISPAT we have initiated :

1. Annual Conferences
2. New Research Initiatives
3. Continuing Education (CMEs) & webinars
4. Community Engagement
5. Member Spotlight.

As we navigate this ever-evolving field, let us remain committed to upholding the highest standards of patient-centred care. By staying informed, engaging in interdisciplinary collaboration, and prioritizing open communication with our patients, we can ensure that prenatal testing and diagnosis are integrated seamlessly into our practice, ultimately contributing to healthier pregnancies and better outcomes for all.

We extend our sincere appreciation to all ISPAT members for your unwavering dedication to advancing the field of prenatal diagnosis and treatment. Your passion, expertise, and commitment to excellence continue to inspire us all.

Thank you for your dedication to excellence in healthcare, and for your unwavering commitment to the well-being of the families we serve.

We congratulate ISPAT office bearers and specially editor Dr. Manjet Mehta for initiating the newsletter. We hope this will continue regularly.

Warm regards.

PROF. DR. NARENDRA MALHOTRA
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Messages

Dear ISPAT Members,

I am humbled to become the President of an organisation with such a huge Legacy.
Actually in obstetric terms. I am PREMATURE. I was to take the reins in 2025 but Destiny has put me here today.

When I look upon the past president in awe I suddenly realise that at 48 I am the youngest President of ISPAT.

The past presidents have such a high persona that it's humbling and exciting to be there in the same league.

As we all know Indian Society for Prenatal Diagnosis and Therapy, fondly called as ISPAT was established in 1989.

We are more than 3 decades from then. At that time Genetics was not what we know today, but today it's different. There is no aspect of healthcare where genetics has not touched. and most importantly "REPRODUCTION" because Genes of parents is what shapes the future progeny.

Being in this position puts a lot of responsibility on me & the team and I must say that we all are ready to take ISPAT forward to newer heights.

ISPAT would embrace all possible avenues to share knowledge plan academic events with all those organisations with whom we overlap.

We have eNewsletter, "Samvaad" series and many more activities planned for months to come.

We welcome you to become an ISPATian if not already and be part of this transformational journey.

Best regards,
Dr. Saurabh Dani
President ISPAT, 2023-25

Dear ISPAT Members,

I am delighted to share the exciting news of our inaugural newsletter launch! As your secretary, curating this edition has been a fulfilling experience, bringing together the latest updates, achievements, and highlights from our dynamic community.

In this special edition, we cast a spotlight on the ever-growing importance and applications of genetics in obstetric practice. Explore insightful articles that illuminate the transformative role of genetic insights in shaping the future of prenatal care. From breakthrough technologies to real-world applications, our newsletter unravels the evolving landscape of genetics in the realm of obstetrics, offering a comprehensive view of its impact on healthcare practices.

I extend heartfelt gratitude to all contributors and our dedicated editorial team for their hard work in bringing you this enriching content. Let's come together to celebrate this milestone and eagerly anticipate the many more editions that lie ahead.

Happy reading...

Best regards,
Dr. Manjeet Mehta
Hon. Secretary General, ISPAT

Introduction To The ISPAT Society

The Indian Society for Prenatal Diagnosis & Therapy (ISPAT) is multi-disciplinary society established in 1989 by liked minded doctors & scientists interested in the Prevention and Management of Birth Defects of genetic and non-genetic origin.

Founded by the top consultants of the country under the guidance of our **Founder President Padmashree Dr. Rustom P Soonawala**, we have spread to every corner of the country.

Our members are the top Obstetricians, Pediatricians, Fetal Medicine Specialists, Radiologists, Geneticists, Biochemists and Medical Scientists of the country.

We enjoy affiliation to the International Society for Prenatal Diagnosis (ISPD) and Affiliated to World Association of Perinatal Medicine initiated by our Past President Dr. Narendra Malhotra. Having started 34 years back, today we are the oldest society for fetal medicine in India.

Genetics today has advanced by leaps & bounds. There is a huge amount of information we get during pregnancy; and every obstetrician is very keen to learn about the same.

We have been travelling across the length & breadth of the country addressing gynaecologists and other clinicians spreading knowledge & awareness of latest medical information.

Famous Personality

Dr. Neharika Malhotra

FRANCIS COLLINS

One renowned genetic scientist is Francis Collins, who led the Human Genome Project and played a pivotal role in mapping the entire human DNA sequence. Francis Collins, born April 14, 1950, is an esteemed American geneticist and physician known for his groundbreaking contributions to genomics. Serving as the director of the National Institutes of Health (NIH) since 2009, Collins gained widespread recognition for his leadership in the Human Genome Project, a monumental international effort to decode the human DNA sequence. Under his guidance, the project was successfully completed in 2003, providing crucial insights into genetics and laying the foundation for advancements in personalized medicine.

Collins dedication to scientific research and his role in deciphering the human genome have left an enduring mark on the field of genetics and medicine.

Anetenatal Presentation Of X Linked CDP, First Case With a Deletional Phenotype

Dr. Veronica Arora, Dr. Sumita Mehta, Dr. Abhishek Satapathy, Dr. Renu Saxena, Dr. Ashok Khurana, Dr. Seema Gupta, Dr. Sunila Jain,

ABSTRACT:

CDPX2 is a X-linked dominant condition characterized by mild to moderate growth deficiency, skeletal abnormalities, distinctive craniofacial appearance and skin abnormalities. Till date all known cases of CDPX2 have been caused by a pathogenic variant in the EBP gene(Xp11.23-p11.22) which encodes the emopamil binding protein(EBP). Deficiency in EBP leads to accumulation of 8 DHC(dehydrocholesterol) and 8(9) cholesterol in the skin, plasma and other body tissues leading to the characteristic clinical manifestations.

We report a fetus with antenatally diagnosed short femur and epiphyseal stippling on the 18 weeks ultrasound. Molecular diagnosis confirmed a deletion of X:g.(_48523698)_(48545024_48558896)del. To our knowledge, this is the first case reported in literature with intragenic deletions as a cause of CDPX2. Further we describe clinico-autopsy-radiological features and a genotype-phenotype correlation in the fetus highlighting a severe antenatal phenotype due to whole gene deletion.

INTRODUCTION:

CDPX2 which is also known as Conradi-Hunermann-Happle syndrome is a X-linked dominant disorder of cholesterol metabolism seen exclusively in females. Clinical features of the disease range from multiple malformations and severe growth restriction to isolated short femora. Characteristic features include rhizomelic shortening of limbs, ichthyosis, distinctive craniofacial appearance and chondrodysplasia punctata(stippling of epiphysis of long bones, vertebrae and distal ends of ribs).1 CDPX2 is caused by pathogenic variant in emopamil binding protein (EBP) gene located on the short arm of X chromosome(Xp11.22-p11.23).[2,3] EBP gene is known to be involved in oligodendrocyte function and defects in this gene leads to accumulation of 8(9) cholesterol and 8-DHC which interfere with cholesterol mediated protein modification leading to bone malformations. Also, as cholesterol forms an integral part of skin barrier permeability, any abnormality in its synthesis leads to skin lesions which are commonly associated with CDPX2.[4]

Till date, copy number variation been identified for the pathogenesis of the disease. We report the first case of CDXP2 diagnosed prenatally which had intragenic deletions in the EBP gene on molecular testing. The case also highlights the genotype-phenotype correlation with the whole gene deletion leading to a severe antenatal phenotype.

CASE REPORT:

A non-consanguineously married couple presented to the genetic centre with antenatally diagnosed isolated short femur (at 5th percentile) in the 18 weeks gestation. Non-invasive prenatal screen for common aneuploidies was low risk. A repeat sonogram was ordered 2 weeks later, which showed a fetus with maturity of 20 weeks and multiple skeletal abnormalities including loss of normal smooth curvature of bony spine, scoliosis with flattening of bodies in the thoracic region and relatively short femur (<5th centile) with a broad and irregular upper end. There was no history of fever, rash on sun exposed areas, joint pains or drug intake during pregnancy and her previous medical history or family history was not significant.

In view of these abnormalities, an invasive testing was ordered to screen for genes related to CDP. Molecular testing confirmed CDP (vide infra).The couple was counselled regarding the nature of the disorder and they opted to discontinue the pregnancy with a postnatal evaluation with fetal autopsy.

FETAL AUTOPSY:

On gross examination, it was a female fetus of 409 grams with no facial dysmorphism. The anthropometric measurements corresponded to 21-22 weeks. There was asymmetric bone growth suggested by a difference of 30 mm between the left and right femur (4.8cm vs 4.5 cm) and 70mm difference between the two humerus bones (5cm vs 4.3cm).

The abdomen was opened via a Y shaped midline incision. Grossly all the intra-abdominal organs as well as the lungs and heart were normal. The internal gonads were female and appeared normal. The cranial cavity was opened and examined; the cerebrum, midbrain and cerebellum appeared normal. The histopathological examination of section from femur and humerus showed cartilaginous cap with underlying enchondral ossification, and a normal growth zone. Scattered variable sized small calcifications were seen in epiphyseal cartilage and the periphery showed normal muscle and soft tissue; these features were consistent with the diagnosis of chondrodysplasia punctata. Placenta and membranes were unremarkable except for occasional microinfarct and the umbilical cord showed three vessels.

INFANTOGRAM:

The bone density appeared normal with mild asymmetrical shortening of the right humerus and femur. Punctate calcific stippling was noted in the proximal right humerus, vertebral column and along the margins of the lower ribcage, bilateral proximal femur , right distal femur and bilateral tali. There were no ossification abnormalities or wormian bones noted in the skull.

MOLECULAR TESTING:

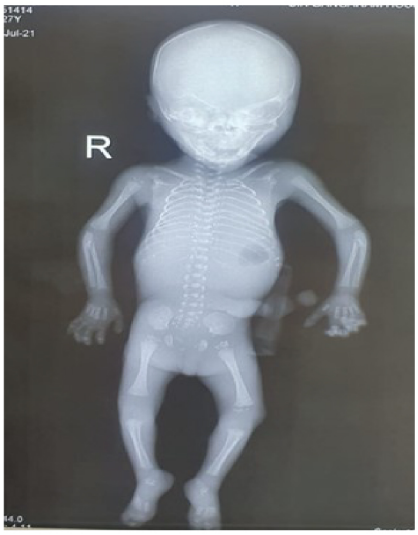
DNA was obtained from cultured amniocytes and testing for ordered for genetic causes related to chondrodysplasia. A QFPCR was performed for maternal cell contamination, common aneuploidies and returned normal. Whole exome sequencing was ordered to exclude monogenic causes of chondrodysplasia. It revealed a heterozygous deletion of 21.2 kb on the X chromosome spanning the genomic location (48523698)_(48545024_48558896)del. This region encompassed the genes EBP and PORCN. The coverage and the depth of these regions were sufficiently targeted in this assay, hence suggestive of a deletion. As the sensitivity of next generation based testing is not adequate for copy number variation, a real time polymerase chain reaction was performed for confirmation. Maternal and fetal samples were subjected to real time PCR which showed one copy of EBP in the fetus and two in the mother, thus confirming the diagnosis of X linked dominant chondrodysplasia punctata.

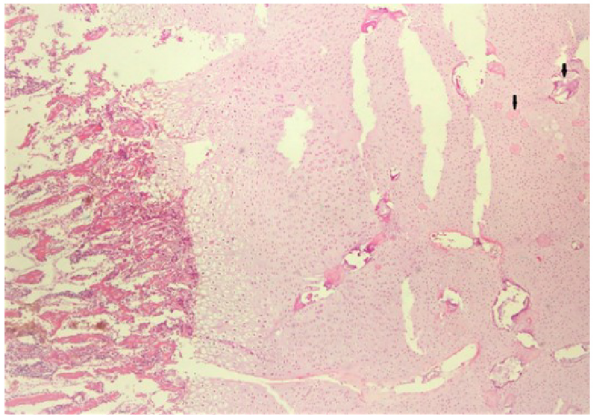
DISCUSSION:

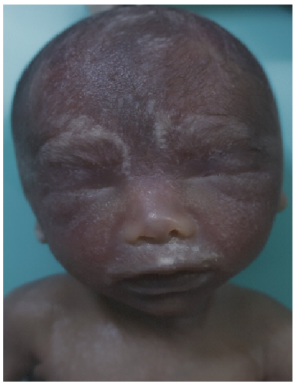
Classic CDXP2 is seen exclusively in females and is an extremely rare disorder with an estimated incidence of 1:100,000 to 1 in 200,000 births showing increased disease expression in successive generations.5 Impairment in cholesterol synthesis and abnormalities in the hedgehog signalling protein pathways is responsible for the clinical phenotype in CDPX2.6 Though the disease is present antenatally in variable forms, only a handful of such cases with such presentations have been described. Abnormalities of spine including hemivertebrae, and vertebral segmentation defects are also often present. In addition, a characteristic finding of binder facies and punctate calcification is remarkable. Short long bones may be the first clue in many of the cases. As in our patient, an isolated short femur was noted at 18 weeks of gestation. Isolated short femur can be present in various chromosomal disorders (especially trisomy 21), focal femoral hypoplasia, certain skeletal dysplasias and can also be an early marker of fetal growth restriction(FGR).7 Thus, it is imperative to bear in mind the ultrasonographic pointers for these disorders to make an early and accurate diagnosis. This will aid in choosing the correct genetic test and proper counseling of the family for pregnancy related decisions.

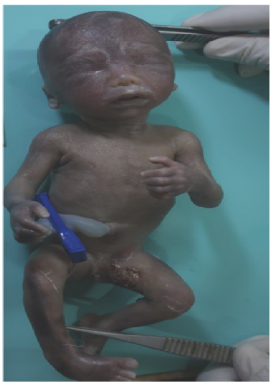
Next generation sequencing is becoming more and more sensitive for screening copy number variantion(CNV). However, every NGS diagnosed CNV needs to be confirmed by an alternate method like chromosomal microarray, real time Polymerase chain reaction or Multiplex ligand probe amplification. In this case, a small heterozygous deletion (uncertain significance) detected encompassing EBP gene was confirmed by real time PCR. The diagnostic challenge also lay in the fact that no deletions have yet been reported in this gene. Extensive literature search including Clinvar and HGMD have also not identified intragenic deletions or duplications as a cause of CDPX2.Sequence variants (approximately 90 reported till date), include missense, nonsense and splice-site mutations have been described.[8] In absence of literature, it is remains challenging to attribute pathogenicity and disease causation to such variants. This highlights the importance of deep phenotyping and a clinic-autopsy-radiological correlation in addition to molecular testing to establish a diagnosis.[9] In our patient, the ultrasound findings as well as the post-natal examination including autopsy as well as infantogram were consistent with chondrodysplasia punctata, making this the first case of a microdeletion causing X linked-chondrodysplasia punctata.

Most of the patients described with X linked CDP have been young girls with characteristic features. There have been a few cases with antenatal onset.10,11 This may reflect the severe degree of skewing of the normal X chromosome in prenatal cases. However, in our patient, the early antenatal onset may be attributed to the presence of deletion of the whole gene and complete abolition of the protein. The presence and degree of skewing is difficult to predict and remains a phenotype altering factor.11,12 Finally, we bring out a genotype-phenotype correlation in this fetal presentation due to EBP gene deletion.









CONCLUSION:

Whole exome sequencing has opened a pandoras box elucidating previously undescribed fetal phenotypes and novel disease mechanisms. Here we describe a rare antenatal presentation of X chondrodysplasia punctata caused EBP deletions, which are previously not reported. A detailed genotype-phenotype correlation along with the molecular mechanisms and post-natal correlation is provided. This paper highlights the utility of genomic test methologies along with the challenges that remain to be addressed.

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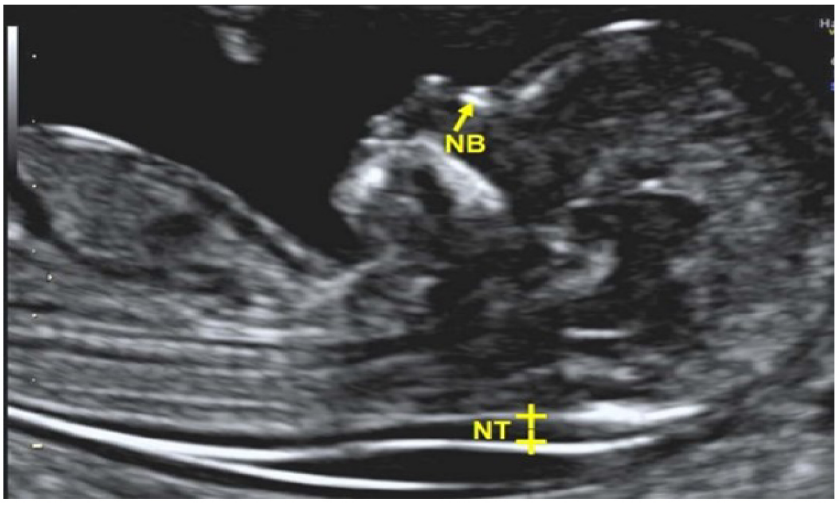
The normal fluid-filled subcutaneous space seen on the back of the fetal neck on an antenatal ultrasound during late first trimester and early second trimester is referred to as nuchal translucency. It is an important tool for identifying fetuses at increased risk of chromosomal abnormalities, certain genetic syndromes and cardiac defect.

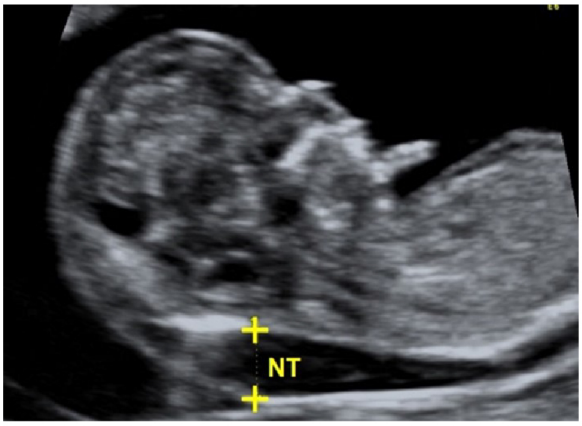
Fetal Medicine Foundation Criteria For Nuchal Translucency Measurement

Dr. Deepika joshi

1. The gestational age must be 11 to 13 weeks and 6 days.
2. The fetal crown-rump length should be between 45 and 84mm.
3. The magnification of the image should be such that the fetal head and thorax occupy the whole screen.
4. A mid-sagittal view of the face should be obtained. This is defined by the presence of the echogenic tip of the nose and rectangular shape of the palate anteriorly, the translucent diencephalon in the centre and the nuchal membrane posteriorly. Minor deviations from the exact midline plane would cause non-visualization of the tip of the nose and visibility of the maxilla.
5. The fetus should be in a neutral position, with the head in line with the spine. When the fetal neck is hyperextended the measurement can be falsely increased and when the neck is flexed, the measurement can be falsely decreased.
6. Care must be taken to distinguish between fetal skin and amnion.
7. The widest part of translucency must always be measured.
8. Measurements should be taken with the inner border of the horizontal line of the callipers placed on the line that defines the nuchal translucency - the crossbar of the calliper should be such that it is hardly visible as it merges with the white line of the border, not in the nuchal fluid.
9. In magnifying the image (pre or post freeze zoom) it is important to turn the gain down. This avoids the mistake of placing the calliper on the fuzzy edge of the line which causes an underestimate of the nuchal measurement.
10. During the scan more than one measurement must be taken and the maximum one that meets all the above criteria should be recorded in the database.
11. The umbilical cord may be round the fetal neck in about 5% of cases and this finding may produce a falsely increased NT. In such cases, the measurements of NT above and below the cord are different and, in the calculation of risk, is more appropriate to use the average of the two measurements.



NT value is considered high when it is >95th percentile for a given crown rump length(CRL).
Raised nuchal translucency can be associated with aneuploidies, structural defects and certain syndromes.



Causes of raised nuchal translucency

Aneuploidy
o Trisomies (Trisomy 21,18,13)
o Turners Syndrome

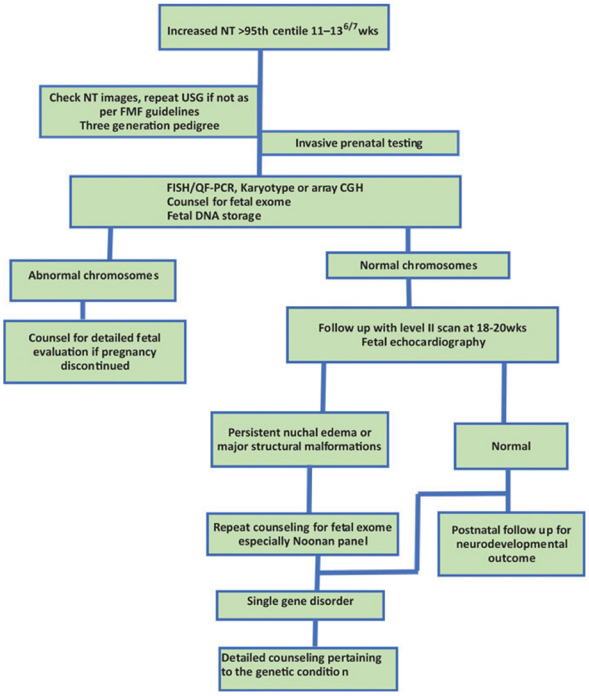
Non-aneuploidy structural defects and Syndromes

o Congenital Heart Disease
o Abdominal wall Defects
o Congenital Diaphragmatic Hernia
o Skeletal Dysplasias
o VACTERL Association.

Intrauterine infections.
Fetal Anemia

Twin twin transfusion Syndrome.
Rasopathies (Noonans)

Algorithm for management of raised NT



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Advancing Precision Medicine: Five Genetic Breakthroughs Transforming Medical Science

Dr. Veronica Arora

1. NEXT-GENERATION SEQUENCING (NGS)

Next-Generation Sequencing has catalysed a paradigm shift in genomic analysis, enabling the high-throughput sequencing of nucleic acids at unprecedented speed and cost efficiency. NGS facilitates the exploration of genomic landscapes across various conditions, including malignancies and inherited disorders, allowing for the identification of mutational spectra and genetic predispositions. This method is instrumental in advancing personalized oncology, through the pinpointing of oncogenic drivers and the selection of targeted therapies, and in genetic counseling, by providing critical insights into hereditary diseases.

2. ARTIFICIAL INTELLIGENCE IN GENOMICS

The application of Artificial Intelligence within genomics has emerged as a transformative force, capable of deciphering the vast and complex datasets generated by contemporary genomic technologies. Through the employment of machine learning models and deep learning frameworks, AI elucidates genetic variants and epigenetic factors associated with disease pathogenesis. This computational prowess facilitates the stratification of patient populations, the prediction of disease progression, and the identification of novel therapeutic targets, thereby enhancing the precision of medical interventions.

3. POLYGENIC RISK SCORES (PRS)

Polygenic Risk Scores represent a significant advancement in the quantitative assessment of an individual's genetic susceptibility to multifactorial diseases. By integrating the cumulative effect of numerous single-nucleotide polymorphisms (SNPs), PRS offers a nuanced risk stratification tool for conditions with complex genetic architectures, such as cardiovascular diseases, diabetes, and psychiatric disorders. This prognostic information is invaluable for the implementation of preventative health measures and the tailoring of treatment strategies to the genetic risk profile of the patient.

4. LIQUID BIOPSY

Liquid biopsy stands at the forefront of non-invasive diagnostic modalities, enabling the detection of circulating tumor DNA (ctDNA) in bodily fluids. This innovative approach provides a real-time snapshot of the tumor's genomic landscape, facilitating the early detection of neoplasms, monitoring of therapeutic efficacy, and identification of resistance mutations. The clinical utility of liquid biopsies in oncology extends to the prognostication of disease recurrence and the guidance of precision oncologic therapies, offering a promising avenue for cancer management without the need for invasive tissue biopsies.

5. INTEGRATIVE OMICS

Integrative Omics embodies the holistic integration of data derived from various omic disciplines—genomics, transcriptomics, proteomics, and metabolomics—to construct a comprehensive molecular portrait of biological systems. This interdisciplinary approach unravels the intricate web of genomic, transcriptional, and metabolic pathways driving pathophysiological processes. By synthesizing multi-omic data, researchers can uncover the molecular determinants of health and disease, fostering the development of novel diagnostics and therapeutics tailored to the molecular constitution of individual patients.

Guidline Corner

NIPT Summary of Recommendations

- Prenatal genetic screening (serum screening with or without nuchal translucency [NT] ultrasound or cell-free DNA screening) and diagnostic testing (chorionic villus sampling [CVS] or amniocentesis) options should be discussed and offered to ***all pregnant patients regardless of maternal age or risk of chromosomal abnormality.*** After review and discussion, every patient has the right to pursue or decline prenatal genetic screening and diagnostic testing.

- Every patient should be offered genetic screening screenin (serum screening with or without nuchal translucency [NT] ultrasound or cell-free DNA screening) and diagnostic testing regardless of maternal age of risk of chromosomal disorders. After deep understanding, a patient should make an informed decision.

- If screening is accepted, ***patients should have one prenatal screening approach,*** and should not have multiple screening tests performed simultaneously.

- NIPS is the most sensitive and specific test for common fetal aneuploidies' possibility for false positive and false negative NIPS should be explained,

- ***Any of the above screening test do not replace the need of a level 2 scan to look for structural abnormalities. This is performed between 19- 20 weeks.***

- Patients with a positive screening test result for fetal aneuploidy should undergo genetic counseling and a comprehensive ultrasound evaluation with an opportunity for diagnostic testing to confirm results.

- ***Post report counselling in a negative screen should include telling the patient that their chances of a major aneuploidy have been decreased.***

- If the NIPS result is NIPS failed, the patient ***should be informed that test failure is associated with an increased risk of aneuploidy, receive further genetic counselling and be offered comprehensive ultrasound evaluation and diagnostic testing.***

- ***In case of malformations or increased nuchal translucency, an invasive testing is to be offered for genetic testing.***

- ***When NIPS is offered for screen positive they should be made aware that it is still a screening test and it will only look for limited abnormalities.***

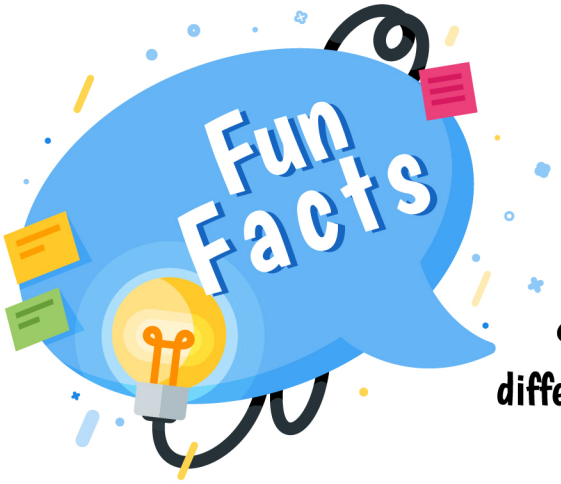
- ***In clinical situations of an isolated soft ultrasonographic marker (such as echogenic cardiac focus, choroid plexus cyst, pyelectasis, short humerus or femur length) where aneuploidy screening has not been performed, the patient should be counseled regarding the risk of aneuploidy associated with the finding and cell-free DNA, quad screen testing, or amniocentesis should be offered.*** If aneuploidy testing is performed and is low risk, then no further risk assessment is needed. If more than one marker is identified, then genetic counseling, maternal–fetal medicine consultation, or both are recommended.

- No method of aneuploidy screening that includes a serum sample is as accurate in twin gestations as it is in singleton pregnancies; this information should be incorporated into pretest counseling for patients with multiple gestations.

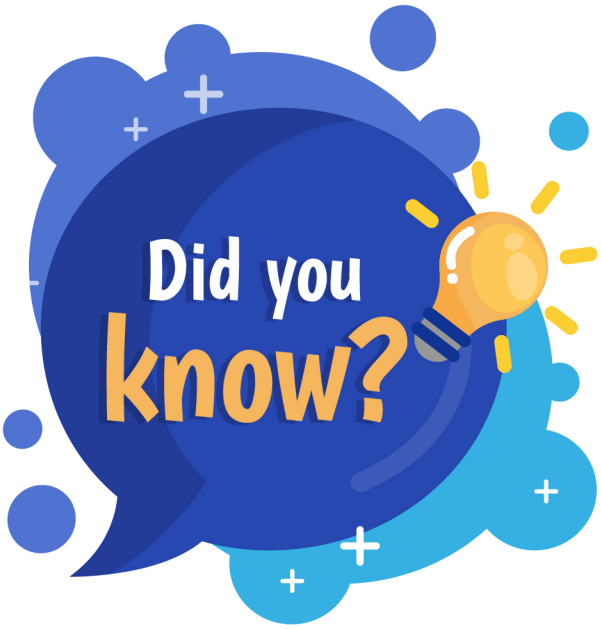
- ***Cell-free DNA screening can be performed in twin pregnancies.*** Overall, performance of screening for trisomy 21 by cell-free DNA in twin pregnancies is encouraging, but the total number of reported affected cases is small. Given the small number of affected cases it is difficult to determine an accurate detection rate for trisomy 18 and 13.

- Because preimplantation genetic testing is not uniformly accurate, ***prenatal screening and prenatal diagnosis should be offered to all patients regardless of previous preimplantation genetic testing.***

- ***The use of multiple serum screening approaches performed independently (eg, a first-trimester screening test followed by a quad screen as an unlinked test) is not recommended*** because it will result in an unacceptably high positive screening rate and could deliver contradictory risk estimates.
- In multifetal gestations, if a fetal demise, vanishing twin, or anomaly is identified in one fetus, there is a significant risk of an inaccurate test result if serum-based aneuploidy screening or cell-free DNA is used. This information should be reviewed with the patient and diagnostic testing should be offered.
- Patients with unusual or multiple aneuploidies detected by cell-free DNA ***should be referred for genetic counseling and maternal–fetal medicine consultation.***



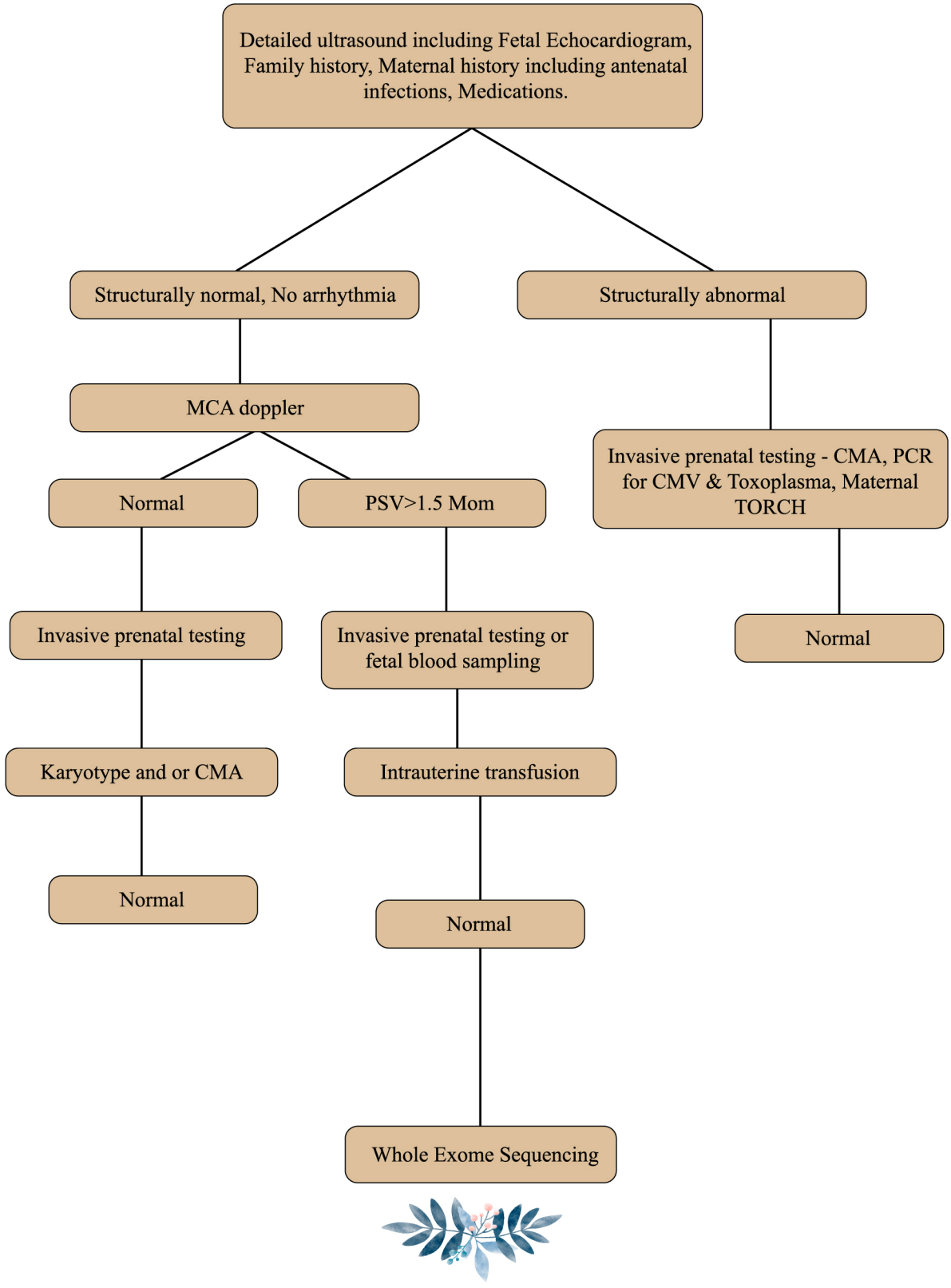
Did you know that humans share about 99.9% of their DNA, making the genetic differences between individuals incredibly small?



The concept you're referring to is known as "fetal programming" or the "developmental origins of health and disease." It suggests that certain conditions during fetal development can influence the risk of adult diseases, such as cardiovascular issues or diabetes. Factors like maternal nutrition, stress, and environmental exposures may play a role. It highlights the importance of prenatal care and a healthy environment for optimal lifelong health.

Diagnostic Algorithm- Hydrops

Dr. Mohammad Shabeer



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CNSeq

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*Redefined with **Low-Pass** Whole Genome Sequencing*

500 Kb Resolution

Upto 500Kb resolution

Advanced Pipeline

adjusts for maternal cell contamination in calculating mosaicism and aneuploidies

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Run on NovaSeq X Plus

World's Highest throughput Sequencer

Genome-wide Coverage

more uniform than conventional CMA

Less DNA

requirement compared to CMA

Validated

for prenatal, pediatric and product of conception cases

Sample Types :
Amniotic Fluid, CVS , POC , gDNA & PVB

CNV-Seq Facts

>7.2%
diagnostic yield than Chromosomal Microarray

11.7%
diagnostic yield in couples with Recurrent Miscarriage

COMING SOON
CNSeqHD

MOVIE REVIEW

DHAK-DHAK

STARS - ★★★

Dr. Neharika Malhotra

CAST

- Ratna Pathak Shah as Manpreet Kaur Sethi "Mahi"
- Dia Mirza as Uzma
- Fatima Sana Shaikh as Shashi Kumar Yadav "Sky"
- Sanjana Sanghi as Manjari alias "Lali"
- Hrriday Malhotra as Nishant Kakkar
- Harshpal Singh as Prabjyot "Prabhi", Mahi's grandson and Sky's friend
- Dheerendra Dwivedi as Shabbir, Uzma's husband
- Kallirroi Tziafeta as Martha
- Ozgur Kurt as Bernett
- Poonam Gurung as Kung Fu Nun

Today got sometime to watch this refreshing movie- Dhak-Dhak on NETFLIX, 4 women and their journey to Leh on bikes.This movie not just talks about breaking stereotypes, travel, friendship etc but also portrays the story via realistic characters. It's so empowering to see these women travelling on their bikes through green grasses, snow-clad roads or mountainous terrains.

No unnecessary songs, no swaying away from the story, and nothing repetitive.While the narrative is both engaging and empowering, there are occasional lapses in continuity, like mysteriously disappearing props and underdeveloped visual support for character backstories. Yet, as the layers unfold, the film comes together into a meaningful whole, exemplifying what a journey is really about.