

A major part of medical genetics activities continue to revolve around diagnosis, counseling and prenatal diagnosis. Cure still is not on the horizon for many disorders though the hope of gene therapy is alive and bright. The power of genomic techniques like microarray and next generation sequencing (NGS) has fastened the pace of identifying causative genes. NGS at present is far from perfect, but has the largest impact on research and diagnostics. Even though attempts to generate the 'Perfect Genome' continue as mentioned in the Genexpress in this issue, at this 'less than perfect' stage, NGS is becoming the first test for every genetic disease or even the first test as soon as a baby is born. The changes in clinical practice are occurring at a mind boggling speed. NGS based diagnosis poses a problem of identification of multiple sequence variants and extreme difficulties in pinpointing the causative pathogenic one. But the same ability to identify multiple sequence variations has proved a boon for disorders with digenic inheritance. In a family with two foetuses with alobar and semi-lobar holoprosencephaly, mutations were found in two genes involved in holoprosencephaly, *SHH* and *DISP1*, inherited respectively from the father and the mother. Many genes for holoprosencephaly are known but reasons for the great degree of intra-familial variability and non-penetrance are yet to be deciphered. NGS may provide some answers to complex types of inheritances.

NGS has also shown that definitely damaging and known pathogenic genetic variations are not uncommon in normal individuals without any clinical manifestations. The reason for such non-penetrance and the magnitude of non-penetrant mutations is yet not clear. Such type of limitations in predicting the phenotype from the genotype poses a problem for DNA-based prenatal diagnosis especially for disorders with known decreased penetrance or variable expression. Though prenatal diagnosis and termination of pregnancy is a readily acceptable option to many families in India, for many reasons like lack of availability, error rate of prenatal screening / diagnostic test, *de novo* mutations, etc. babies with untreatable diseases will continue to be born. A study from Massachusetts revealed that the estimated rate at which live births with DS was reduced as a consequence of DS-related elective pregnancy

terminations was 49%. This stresses the need to continue and improve supportive care for the 'still incurable disorders'. The supportive care for incurable disorders is demanding on the family as well as the medical system and society. In India supportive care for any disorder is really at a very preliminary stage. As government support for the treatment of rare disorders in India is becoming a reality and the will of the policymakers to improve the facilities is working towards reality, we should not forget the disorders for which no curative treatment is available at present. Needs of special children and adults need more attention and a lot of efforts are required to help them to lead fruitful and happy lives and get mainstreamed in the society. Children's day celebrated in the Sanjay Gandhi Postgraduate Institute, Lucknow with children with Down syndrome had the objective of letting the parents know that their special children can do a lot and be successful. The efforts to get them into normal schools and many other things can be done by the parents as a group. The Down Syndrome Milan Samarth was successful in infusing enthusiasm and positivity in the minds of parents. But what other success it achieved was not aimed. It brought out the child in all of us who organised games for the children, danced with them and watched them dancing. The happiness which the organizers and volunteers experienced cannot be described in words. We always say that to keep the child in oneself alive is the way to be happy. Individuals with Down syndrome have the gift of a child-like pure mind and they are away from bad emotions like competition, jealousy and craving for money which brings sadness and pain in our lives. The purity of such souls makes them an extraordinary beings. We need to bring these children and adults into the mainstream so that they can lead normal lives and we can learn happiness from them. Indian society and the government needs to do more for the schooling, extracurricular activities, vocational training and job opportunities for children with Down syndrome and others with special needs.

May the new year bring happiness and more solutions to the challenges in this era of NGS!



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