GeNeXpreSS

Coffee with Genome: Emerging Paradigms in Personalised Medicine

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WGS optimises treatment of intensively ill children (French et al., 2019)

French et al. performed trio Whole Genome Sequencing in a cohort of 195 intensively ill children in the neonatal and pediatric intensive care units. A genetic diagnosis was achieved in 21% children, and in 90% of the cases, phenotypic descriptor was a poor predictor of the gene identified. In 65% cases overall, and in 83% neonates, the diagnosis significantly altered clinical management in terms of modification of treatment and care pathways or palliative care decision making.

WES paves way for treatment of rare metabolic disorder (Tavasoli et al., 2019)

Tavasoli et al. report a child with an extremely rare metabolic disorder involving manganese deposition in the basal ganglia, presenting with a phenotype of dystonia, ataxia and polycythemia. Whole Exome Sequencing (WES) revealed homozygous mutation in *SLC30A10*, which codes for a manganese transporter. There was reduction in serum manganese levels, normalisation of haemoglobin and significant resolution of MRI lesions, along with partial neurological improvement, following institution of monthly infusions of disodium calcium edetate and oral iron compounds.

Unexpected diagnosis and treatment after WES (Fan et al., 2014; Zahed et al., 2017)

Fan et al. report a 36-years-old lady, who was clinically suspected to be affected with hereditary spastic paraperesis (HSP) and had limited quality of life due to significant motor difficulties. Targeted genetic testing for HSP was inconclusive, and WES revealed heterozygous nonsense mutation in *GCH1*, revealing dopa-responsive dystonia as the diagnosis. The patient was started on Levodopa and Carbidopa combination, following which she was able to walk independently within a span of 8 weeks and showed progressive improvement in all domains. Zahed et al. report three individuals diagnosed to have Gitelman syndrome following WES. The three patients had varied clinical status, one having clinical and biochemical phenotype of Gitelman syndrome, one being asymptomatic, and another being symptomatic for other reasons, and confirmed to be affected following molecular diagnosis. Treatment after molecular diagnosis was beneficial to all three patients.

When coffee is the answer

(Méneret et al., 2019)

Méneret et al. report an interesting case of an 11-years-old boy, who was affected with paroxysmal hyperkinetic involuntary movements with upto 30 episodes per day, causing severe disruption in activities of daily living. Molecular testing revealed mosaic heterozygous mutation in *ADCY5*, which codes for an enzyme that is activated by adenosine through A_{2A} receptors. Caffeine is known to suppress A_{2A} receptors, and a thrice a day dose of espresso worked like magic for this child, who was relieved of his symptoms and could resume normal school and even ride a bike.

References

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