A beacon of hope for patients with epilepsy

Epilepsy is a neurological disorder frequently seen in the clinical setting. A patient with epilepsy lives with fear and anxiety about the uncertainty of the seizure episodes that might prove fatal when it strikes during certain activities like driving or swimming.

A research team from California has come up with a new seizure predicting mathematical model that can precisely warn epilepsy patients five minutes to one hour before they are likely to experience a seizure. The researchers used implantable devices that offered ongoing real-time intracranial electro encephalogram (EEG) monitoring. The mathematical model can use this data and assess unique brain signals from each patient, looking out for patterns of activity that show a pre-ictal state, in which the patient is at risk of seizures.

A timely warning of seizures provides an opportunity for epileptics to safeguard themselves – they can avoid driving or moving about or can take a dose of antiepileptics. This also paves way for other interventions like responsive electrical stimulation in which seizure signals are detected and electrical stimulation is sent to the brain through an implantable device to prevent the seizure from happening. This research could prove to be a game changer for these patients.

(Journal of Neural Engineering, 26 February 2021)

Does blood group influence COVID-19 infection?

Not all individuals seem to be equally susceptible to infection with SARS-CoV-2. Multiple factors might be responsible for this differential susceptibility, ABO blood group being one among them. A possible link between ABO blood groups with COVID-19 susceptibility and severity has been shown in multiple studies with contrasting results.

Researchers focussed on the receptor binding domain (RBD) of SARS-CoV-2 and assessed how it interacted with respiratory and red blood cells (RBCs) in A, B and O blood types. They found that the RBD bound preferentially to blood group A found on respiratory cells, but had no predilection for blood group A RBCs, or other blood groups found on respiratory or RBCs.

This finding may provide insight into the possible link between blood group A and infection with COVID-19. Further understanding of mechanisms of interaction of the virus with blood groups might enable discovery of newer therapies or methods of prevention.

(Blood Advances, 3 March 2021)

Precarious behavior post COVID-19 vaccination: The Peltzman effect

The COVID-19 pandemic has familiarized people with the concept of ‘risk compensation’ – behavioral modification to curtail damage in risky circumstances. People washed hands frequently, wore masks and socially distanced themselves in cases skyrocketed. However, this practice has whittled away as the novelty of the threat faded, resulting in ‘pandemic fatigue’ manifesting as reduced adherence to safety measures. As COVID vaccines are rolled out, there has been increasing optimism and euphoria among people anticipating the end of the pandemic. This has further intensified risky behavior and challenged public health efforts.

In 1975, Sam Peltzman, an economist from the University of Chicago, described the ‘Peltzman effect’ – people show a compensatory increase in risky behavior with introduction of safety measures. Better road safety regulations would tempt people to indulge in risk-taking behavior once they feel that situations are safer. This effect identifies four major contributors to risk compensation, all of which are present in the COVID-19 pandemic: i) The new safety measure should be visible (people being vaccinated are aware of the fact); ii) People must be motivated to engage in risky behavior (many yearn to return to pre-pandemic lifestyle after a year of lockdown); iii) People must have the control to increase risky behavior (people are free to move post relaxation of lockdown); and iv) The safety measure has to be effective (with presumably efficacious vaccines, many have a sense of security). As the number of vaccinated people rises, people would have a misleading sense of security in “herd immunity” long before it is actually present.

As we step into a new stage of the pandemic, marked by both the ongoing vaccination and the emergence of novel virus variants, an amelioration of safety measures might sadly concur with upsurge of viral spread. Hence, steps need to be taken to tackle possible harms from the Peltzman effect. Enforcing risk-avoiding behavior post vaccination is less likely to be effective. Risk reduction, rather than total abstinence, seems a more feasible alternative. Prioritizing mask-wearing, irrespective of vaccination status, might have the greatest public health benefit. This might need a compromise on other restrictions, like allowing gatherings with vaccinated individuals. Lack of timely measures might allow the virus to ravage the globe.

(Annals of Internal Medicine, 2 March 2021)

JERIN C SEKHAR

drjerincsekhar@gmail.com