Lay Summary

BRAIN UK Ref: 19/011

The purinergic P2X7 receptor as drug target for refractory status epilepticus

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Severe seizures, which last for more than 5 minutes, are known as status epilepticus. This is a medical emergency and the priority is stopping the seizure activity. Approximately 30% of patients, however, are resistant to drugs designed for stopping seizures. We have found that, in mice, a particular receptor - P2X7 - contributes to this drug resistance. Further, we have also shown that P2X7 is increased in conditions that are often related to increased resistance to anti-seizure drugs, such as inflammation in the body. It is unclear, however, whether the findings in mice are also true for humans. The first step towards investigating this is to see whether patients who showed resistance to anti-seizure drugs have a higher than normal amount of P2X7. This would suggest that P2X7 is also involved in drug-resistance in humans and would back the idea that developing treatments targeted at P2X7 may be useful for breaking drug-resistance in these patients.