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Diabetes study raises treatment hope for kidney disease patients

Scientists have identified a key molecule linked to kidney disease in people with diabetes.

Blocking the protein prevents kidney damage associated with diabetes in rats and mice, the study also found.

The findings shed light on the causes of this common diabetes complication and could lead to new therapies, researchers say.

Diabetes results in high levels of blood sugar and affects 415 million people globally. It is the leading cause of kidney failure, with 40% of people with diabetes eventually developing kidney disease.

The protein – called P2X7R – plays an important role in inflammation and the immune system and has previously been linked to kidney diseases not associated with diabetes. This is the first time it has been shown to cause diabetic kidney disease and to affect disease severity.

The research team – led by the University of Edinburgh – found high P2X7R expression in kidney biopsies from people with diabetes, but was virtually undetectable in biopsies from non-diabetics. Higher P2X7R expression was associated with poorer kidney function and increased tissue scarring.

In follow-up experiments, mice lacking the gene that makes P2X7R did not develop kidney scarring in response to diabetes, suggesting that damage could be prevented.

Furthermore, the researchers also showed that a drug that block P2X7R lowers high levels of infiltrating kidney macrophages – a hallmark of diabetic kidney disease – in rats induced with diabetes. The scientists have hailed this as a significant advance in the search for treatments.

Dr Robert Menzies, British Heart Foundation Immediate Fellow at the University of Edinburgh, said: “Diabetic kidney disease is reaching epidemic levels, but we are still searching for that blockbuster drug to help patients. This study is a major advance in understanding how kidney damage occurs in diabetes and where we might focus our efforts in finding a treatment.”

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“Our next studies are being designed to determine if the P2X7R-blocking drug, which is already known to be safe in humans, could reverse more severe kidney damage or even prevent it. These studies are a very encouraging move forward.”

The study – carried out in collaboration with UCL and Imperial College London– was supported by the Medical Research Council and Kidney Research UK, with findings published in the journal *EBioMedicine*.

Elaine Davies, Director of Research Operations at Kidney Research UK, said: “With diabetes representing the most significant risk factor for developing kidney disease, we welcome this important step forward in our understanding of the mechanism behind diabetic kidney disease. We look forward to hearing about how this study develops.”

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