Predicting liver injury in paracetamol overdose patients

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The Liverpool team identified proteins and a strand of ribonucleic acid that may help develop a blood-based test to predict risk of liver injury.

Scientists at the University of Liverpool have identified molecules in the blood that could help predict the risk of a patient developing liver injury eight hours after a paracetamol overdose.

Paracetamol overdose is one of the most frequent cases of hospital

admissions, accounting for approximately 90,000 hospital attendances per year in the UK and almost 47,000 bed days in England alone. Overdose of the drug can result in liver damage, and in severe cases death.

Measuring biomarkers

The Liverpool team, in collaboration with the Royal Infirmary Edinburgh, the National Poisons Information Service, and Novartis, have identified proteins and a strand of ribonucleic acid (RNA) that may help in the future development of a blood-based test at hospitals to predict a patient's risk of liver injury.

These molecules, or biomarkers, are found in the liver, but when the liver cells die following paracetamol overdose, they spill out into the blood where scientists can measure them to give an indication of the level of injury to the liver.

Researchers, based at the University's Medical Research Council's (MRC) Centre for Drug Safety Science, showed that the biomarkers were more sensitive and accurate compared to current clinical methods and could predict the likelihood of liver toxicity eight hours after paracetamol overdose, a point at which indicators used today are ineffective.

Dr Dan Antoine, from the Centre for Drug Safety Science, said: "Clinicians work hard to treat paracetamol overdose patients as quickly as possible, but it is difficult to get the correct measure of treatment without a highly sensitive test that can predict the risk of the patient developing liver damage.

"The outcome of our study shows that it could be possible to develop a new test based on biomarkers in the blood, to determine which patients

are at high risk of acute liver injury and which are not. Identifying patients in this way will make a significant impact on clinical practice, reducing the number of hospital admissions and the length of time patients are treated with antidote."

Provided by University of Liverpool