

Scientists identify genetic drivers of leukaemia

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(Medical Xpress) -- Scientists at Newcastle University have discovered three key genetic errors which can dictate how adult patients develop leukaemia and respond to treatment and could help doctors adapt future treatments.

This breakthrough study published today in the [Journal of Clinical Oncology](#), could help doctors form a more accurate prognosis for each patient and adjust treatment accordingly.

Acute [lymphoblastic leukaemia](#) (ALL) is a [blood cancer](#) which is characterised by the uncontrollable multiplication of genetically mutated [white blood cells](#), which crowd out healthy blood cells.

The Newcastle University team, which was funded by the charity Leukaemia & Lymphoma Research, studied nine newly discovered genetic mutations in the leukaemia cells of 450 adolescents and adults diagnosed with ALL. The researchers added this new information to existing data to generate the most comprehensive genetic profile of adolescent and adult ALL compiled to date.

In the paper the Newcastle University team showed that the incidence of the new mutations was higher than expected, with over two thirds of patients found to carry at least one. Moreover three of the new mutations were shown to be 'high risk' markers and patients carrying one of the mutations had a greater risk of relapse or death when treated with standard therapy.

Over one quarter of patients harboured one or more of these high risk mutations, an incidence higher than that observed among children with ALL.

Professor Anthony Moorman, who led the team at the Northern Institute for Cancer Research at Newcastle University, said: “This study represents a significant advance in our understanding of the clinical relevance of genetics in adult ALL. While over 80% of children with ALL are now cured, survival rates for adults are much lower.

“Identifying the precise genetic abnormalities in each patient’s cancer has proven extremely useful in helping to guide the treatment of childhood leukaemia and understand how the disease develops. We hope that this research will contribute to helping repeat this success in adults, where better prognostic tools are desperately needed.”

Professor Chris Bunce, Research Director at Leukaemia & Lymphoma Research, said: “By identifying high-risk genetic profiles in adult leukaemia patients, doctors should be able to better ensure each individual receives the right level and type of treatment for his or her disease. More research needs to be done into these three genetic mutations and how these can be ‘targeted’ by new drugs.”

More information: [jco.ascopubs.org/content/early ...
011.40.3907.abstract](https://jco.ascopubs.org/content/early/2012.40.3907.abstract)

Provided by Newcastle University

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