For acute myeloid leukemia, genetic testing is often worth the wait

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New tailored therapies offer exciting prospects for treating acute myeloid leukemia (AML), but taking advantage of them may require waiting a week or more for genetic testing before starting treatment, posing a dilemma for doctors and patients facing this deadly and often fast-moving disease. A new study bolsters the evidence that this approach is safe for most patients under careful clinical oversight.

Doctors can use information available in the first day or two after diagnosis to effectively determine which patients need standard chemotherapy urgently. The study, published today in the journal *Blood*, suggests in stable patients, doctors can wait for genetic tests in order to try a newer therapy that is targeted to their specific cancer.

"In the majority of patients, it seems safe to wait for the diagnostic results in order to assign the patient to the correct subgroup and select the appropriate treatment, rather than using the historic one-size-fits-all chemotherapy approach," said lead study author Christoph Ro?llig, MD, of Universita?tsklinikum Dresden in Germany. "We think a potential deterioration in prognosis, if it exists at all, will be much smaller than the clinical benefit a patient would gain by receiving the appropriate novel treatment."

AML is a cancer of the blood and bone marrow that often progresses very quickly. Most people receive their diagnosis within a few weeks after developing symptoms; if the leukemia is left untreated, most people die within a few months. As a result, for decades doctors have advised most of their patients to start chemotherapy immediately, often within a day of diagnosis.

Standard tests used to assess AML typically provide results within hours or days. These include blood tests that measure the number of white blood cells in the blood and biomarkers that indicate how quickly cancer cells are multiplying, as well as tests such as echocardiograms and lung assessments that doctors use to gauge whether a patient is healthy enough to undergo chemotherapy.

Genetic testing, on the other hand, may take one to two weeks, depending on the type of test used. The genetic characteristics of a patient's specific cancer can be used to predict which treatments will work best. For example, leukemias with certain genetic characteristics respond better to newer drugs than to the standard chemotherapy, while others do not respond to any available drugs and require a bone marrow transplant.

To determine whether delaying treatment has an impact on the course of the disease, the researchers analyzed data from 2,263 patients treated at hospitals throughout Germany. Comparing outcomes among patients who started treatment at different lengths of time after diagnosis, the researchers found that starting treatment later did not negatively affect patients' prognosis, as long as patients were clinically stable at the time of diagnosis.

On the whole, the length of time between diagnosis and treatment was not associated with any significant differences in patients' response to treatment, overall survival, or rate of early death. This held true for patients of all ages and for those with a variety of genetic and disease characteristics.

One caveat is that starting treatment earlier is necessary for patients whose AML is clinically unstable—for example, those with infections, extremely high white blood cell counts, rapidly multiplying cancer cells, or coagulation disorders caused by the leukemia, said Dr. Röllig. Doctors can assess these factors with initial diagnostic test results, usually available within a day or two.

Researchers said the findings not only underscore

the value of tailored treatments, but also the importance of careful monitoring to determine when it is wise to start treatment before genetic test results are available.

"Clinical judgment is very, very important," said Dr. Rollig. "This study does not imply that we can become complacent. Every newly diagnosed patient must be closely monitored in order to avoid missing a worsening of the leukemia."

While the study included only patients treated in Germany, he said the results should be applicable in the Unites States and any developed country where intensive chemotherapy is available as the standard of care for AML.

Dr. Rollig also noted that, as a retrospective analysis, the study does not offer the same level of certainty as a randomized controlled trial. However, ethical considerations make a randomized trial infeasible for determining the optimal treatment timing for AML.

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