Pharmacogenomic score can personalize treatment of leukemia in children

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For pediatric patients with acute myeloid leukemia (AML), a pharmacogenomics-based 10 single nucleotide polymorphism cytarabine (Ara-C) score (ACS10) can be used to tailor induction regimens,

yielding improved outcomes, according to a study published online July 30 in *Clinical Cancer Research*.

Noting that low ACS10 has been shown to be associated with poor outcome in AML patients treated with standard chemotherapy, Richard J. Marrero, Pharm.D., from the University of Florida College of Pharmacy in Gainesville, and colleagues examined the ACS10 score in the context of three induction regimens.

Low versus high ACS10 score groups were assessed for event-free (EFS) and overall survival (OS) among patients in two clinical trials (AML02 and AML08): AML02 low-dose cytarabine (LDAC; 91 patients), AML02+AML08 high-dose cytarabine (HDAC; 194 patients), and AML08 clofarabine+cytarabine (Clo/Ara-C; 105 patients).

The researchers found that patients treated with Clo/Ara-C had significantly improved EFS and OS compared with LDAC within the low ACS10 score group (score ≤0; hazard ratios, 0.45 and 0.44, respectively). Within the high ACS10 score group (score >0), augmentation with Clo/Ara-C was not favorable compared with LDAC for EFS or OS (hazard ratios, 1.95 and 2.17).

Compared with nonpersonalized approaches, personalized models predicted 9 percent improvement in outcome in ACS10 score-based tailored induction (Clo/Ara-C for low- and LDAC for high-ACS10 score groups).

"Given the genetic basis of the score, it could be used by clinicians preemptively to match patients with the most effective treatment regimen to lead to remission," lead author Jatinda Lamba, Ph.D., also from the University of Florida, said in a statement.

More information: Richard J. Marrero et al, Pharmacogenomic Score

Effectively Personalizes Treatment of Acute Myeloid Leukemia, *Clinical Cancer Research* (2024). DOI: 10.1158/1078-0432.CCR-24-0863