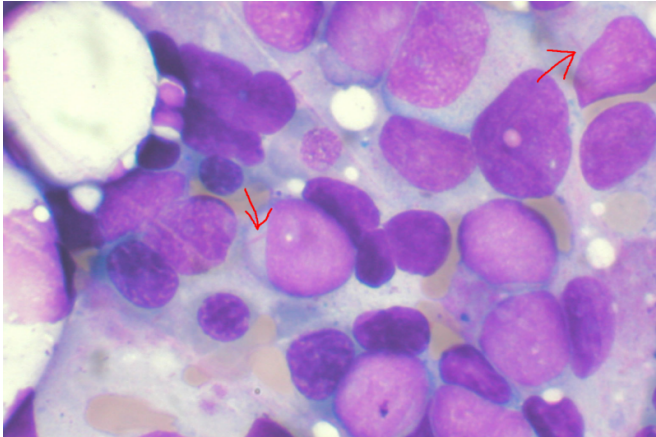


Low-calorie diet and mild exercise improve survival for young people with leukemia

1 April 2021



Bone marrow aspirate showing acute myeloid leukemia. Several blasts have Auer rods. Credit: Wikipedia

In some cancers, including leukemia in children and adolescents, obesity can negatively affect survival outcomes. Obese young people with leukemia are 50% more likely to relapse after treatment than their lean counterparts.

Now, a study led by researchers at UCLA and Children's Hospital Los Angeles has shown that a combination of modest dietary changes and exercise can dramatically improve survival outcomes for those with acute lymphoblastic leukemia, the most common childhood [cancer](#).

The researchers found that patients who reduced their calorie intake by 10% or more and adopted a moderate exercise program immediately after their diagnosis had, on average, 70% less chance of having lingering leukemia cells after a month of chemotherapy than those not on the diet-and-exercise regimen.

Lingering [cancer cells](#) in the [bone marrow](#), which are more likely to be found in overweight individuals, are associated with worse survival and

a higher risk of relapse, often leading to more intense treatments like [bone marrow transplants](#) and immunotherapy.

"We tested a very mild diet because this was our first time trying it, and the first month of treatment is already so difficult for patients and families," said senior author Dr. Steven Mittelman, chief of pediatric endocrinology at UCLA Mattel Children's Hospital and a member of the UCLA Jonsson Comprehensive Cancer Center. "But even with these mild changes in diet and exercise, the intervention was extremely effective in reducing the chance of having detectable leukemia in the bone marrow."

As part of the clinical trial, which took place at Children's Hospital Los Angeles, researchers worked with registered dietitians and [physical therapists](#) to create personalized 28-day interventions for 40 young people between the ages of 10 and 21 who were newly diagnosed with [acute lymphoblastic leukemia](#).

The intervention was designed to cut participants' [calorie intake](#) by a minimum of 10% in order to reduce both fat gain and lean muscle loss. The physical activity component included a target level of 200 minutes per week of moderate exercise.

The results, published in the American Society of Hematology's journal *Blood Advances*, showed a decrease in fat gain among those who were overweight and obese, as well as an improved insulin sensitivity and an increase in the beneficial hormone adiponectin, which is involved in regulating glucose and breaking down fatty acids. Most importantly, the researchers found a 70% decrease in the chance of having lingering [leukemia](#) cells in the bone marrow—known medically as minimal residual disease—when compared with a historical control group.

"We hoped the intervention would improve

outcomes, but we had no idea it would be so effective," Mittelman said. "We can't really add more toxic chemotherapies to the intense initial treatment phase, but this is an intervention that likely has no negative side effects. In fact, we hope it may even reduce toxicities caused by chemotherapy."

"This is the first trial to test a diet-and-exercise intervention to improve treatment outcomes from a childhood cancer," said principal investigator and lead author Dr. Etan Orgel, Director of the Medical Supportive Care Service in the Cancer and Blood Disease Institute at Children's Hospital Los Angeles. "This is an exciting proof-of-concept, which may have great implications for other cancers as well."

Next steps include further testing of the approach in a multicenter randomized trial, which will be launched later this year, the researchers said.

More information: Etan Orgel et al, Caloric and nutrient restriction to augment chemotherapy efficacy for acute lymphoblastic leukemia: the IDEAL trial, *Blood Advances* (2021). DOI: 10.1182/bloodadvances.2020004018
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