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Researchers find link between obesity and blood cancer

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Indiana University School of Medicine researchers studying clonal hematopoiesis of indeterminate potential (CHIP), a blood condition that may increase the risk of blood cancer, discovered that obesity was

strongly associated with the condition. Their findings were recently published in the *Journal of Clinical Investigation*.

CHIP is a condition where blood cells accumulate genetic mutations, increasing the risk of developing blood cancer. Although CHIP is common in aging, the risk factors that contribute to the condition are poorly understood. "Our study's results showed being overweight or obese may be a risk factor for CHIP because obesity causes inflammation in the body and changes the bone marrow where blood cells are made. This increases a person's risk for blood cancer and cardiovascular disease," said lead author of the published study Santhosh Pasupuleti, Ph.D., assistant research professor of pediatrics at the Herman B Wells Center for Pediatric Research and a researcher at the IU Melvin and Bren Simon Comprehensive Cancer Center. "The significance of our findings offers potential new avenues for treatment in individuals with CHIP and obesity."

The researchers analyzed data from more than 47,000 individuals with CHIP and found 5.8 percent of the population was associated with a significant increase in waist-to-hip ratio. Additionally, mice models with obesity and CHIP used in the study were observed to have mutated blood cells grow more quickly. Thus, their work strongly supports the notion that finding ways to maintain a healthy weight and keeping one's level of systemic inflammation in check may lower the risk of developing blood cancer with age.

"Our current and future studies are focused on identifying therapeutic strategies to mitigate the expansion and rapid growth of CHIP-bearing mutated blood cells," said Reuben Kapur, Ph.D., director of the Herman B Wells Center for Pediatric Research, co-program leader of Hematopoiesis and Hematologic Malignancies at the IU Melvin and Bren Simon Comprehensive Cancer Center, and co-author of the study. "Surprisingly, our initial findings suggest that common medications used

for treating blood pressure and diabetes may play a role in regulating the growth of mutated blood cells. Additional future studies will focus on examining individuals who are on these types of medications and their long-term risks of developing blood cancer."

As part of their study, the investigators also tested different drug combinations to target CHIP mutant cells and find potential therapeutic approaches for the condition. Overall, the research suggests that a better understanding of the relationship between CHIP and obesity may help identify individuals at risk of developing diseases like leukemia and find methods for future treatments.

More information: Santhosh Kumar Pasupuleti et al, Obesity induced inflammation exacerbates clonal hematopoiesis, *Journal of Clinical Investigation* (2023). DOI: 10.1172/JCI163968

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