

Largest study to date of minipuberty identifies two new patterns of the reproductive hormone, AMH, in infant girls

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Minipuberty is a stage of reproductive development during infancy in both sexes when reproductive hormones change and reproductive organs

develop. The importance of minipuberty is not well understood but could represent an opportunity for the early identification of future reproductive conditions and enable prompt treatment. Anti-Müllerian hormone (AMH) is one of the hormones that changes during minipuberty, and it plays a key role in the development of reproductive organs in boys. However, the role of AMH in infant girls is less clear.

In a new study, Assistant Professor in the Department of Global and Community Health Helen Chin used data from the NIEHS Infant Feeding and Early Development (IFED) study to identify four distinct patterns of AMH concentrations across infancy: decreasing, early peak, middle peak, and low depending on trends in AMH levels throughout the first nine months of life. Two of these patterns of AMH (decreasing and low) had not previously been documented.

"The four distinct patterns we identified suggest that infant girls vary in their minipubertal response. The initially elevated AMH concentrations in some girls (decreasing group) and consistently low AMH concentrations (low group) in others was an unexpected observation that should be followed up to determine if they represent an opportunity for the early identification of future reproductive conditions," said Chin.

In the study, 17% of participants had a decreasing pattern, 36% had an early peak, 35% had a middle peak, and 12% had a low. Leveraging previously collected data on reproductive outcomes in this group of girls, researchers were able to interpret their AMH findings in relation to other reproductive changes during minipuberty. They found that when AMH was high, estrogen was also elevated and ovaries were larger with more developing eggs, a similar relationship to what is seen in reproductive-aged women.

"While this study cannot confirm these exact AMH groups across all infant populations, this is the largest study to date in terms of both the

number of infants examined and the number of times AMH was measured across infancy allowing us to better estimate AMH patterns in infant girls," said Chin. "The consistency of the timing of AMH changes with other reproductive hormones and changes in the ovary strongly suggest that infant girls vary in their minipubertal response."

How the variations in AMH affect girls and their chances of developing a reproductive disease has yet to be determined and is a future topic of study.

["Early life anti-Müllerian hormone trajectories in infant girls"](#) was published online in *Epidemiology* in March 2023. Assistant Professor in Mason's Department of Global and Community Health Jenna Krall was also part of the study team with researchers from the National Institute of Environmental Health Sciences, the University of Southern California Keck School of Medicine, the University of Pennsylvania Perelman School of Medicine, and The Children's Hospital of Philadelphia.

More information: Helen B. Chin et al, Early life anti-Müllerian hormone trajectories in infant girls, *Epidemiology* (2023). [DOI: 10.1097/EDE.0000000000001610](#)

Provided by George Mason University

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