No Causative Link Between Biological Aging and PFAS

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PFAS studies attempting to link various specific and general medical conditions are frequently in the news despite significant lags in scientific support behind media attention. A recent example of this comes from a Shanghai Jiao Tong University report attempting to associate PFAS with accelerated aging in middle-aged men.

Researchers at Shanghai Jiao Tong University in China analyzed public data blood samples from older men and women that were screened for concentrations of 11 different types of PFAS. The DNA 'methylome', an epigenetic marker regulating gene expression, was also measured in the blood samples to determine the participant's biological age. The purported results associate two types of PFAS alternatives - PFNA (perfluorononanoic acid) and PFOSA (perfluorooctanesulfonamide) - to accelerated epigenetic aging in middle aged men.

Although PFNA and PFOSA were found in about 95% of the samples, higher concentrations of PFNA in men aged 50-64 were reportedly associated with an increase in epigenetic aging by some measures, but not others. PFOSA concentrations were also reportedly linked to other aging biomarkers. While it is not clear why this link was not found in women, lifestyle factors such as smoking may compound the effects of these chemicals.

Despite this association, there is no causal link between PFAS and accelerated aging. In fact, this association may very well be due to other factors affecting men of this age, including their exposure levels to these chemicals and their rate of biological aging. Dr. Ya-Qian Xu, the first author of the study, explained that “midlife is a sensitive biological window where the body becomes more susceptible to age-related stressors, which may explain why this group responds more strongly to chemical exposure.”

Notably, there was no significant difference in the PFAS concentrations between men and women of these age groups, and nor were any links found between biological aging and other types of PFAS. Furthermore, there was no significant link between PFNA and PFOSA and aging in younger men and those over 65. More research is required to determine any causative link between PFAS and biological aging.