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Identifying chemical exposures associated with Monoclonal Gammopathy of Undetermined Significance (MGUS)

Abstract:

Monoclonal Gammopathy of Undetermined Significance (MGUS) is a condition where an abnormal protein, known as monoclonal protein or M-protein, is found in the blood. Although MGUS does not usually cause any symptoms, it is considered important because it may develop into more serious diseases like multiple myeloma or other blood disorders. Monitoring MGUS is essential to ensure early detection and intervention if it progresses. This study aimed to identify potential environmental exposures associated with MGUS. Using data from the National Health and Nutrition Examination Survey (NHANES), the goal of our study was to evaluate if exposures in a cross-sectional population including people with MGUS and matched controls were associated with increased risk of MGUS. Exposure biomarkers were downloaded from NHANES survey years 1999-2000, 2001-2002, and 2003-2004, and linked to individuals with M-protein levels measured in blood and matched controls. Since biomarker panels were measured in different individuals, the number of cases for each measure ranged from 20 to 156 and were matched to the same number of controls. To test for exposures associated with MGUS, linear regression was performed separately for each exposure, and associated biomarkers were identified using $p < 0.05$.The results showed that chemical biomarkers such as polychlorinated biphenyls, 2,3,4,7,8-pentachlorodibenzofuran, mono-benzyl phthalate, urinary cadmium, and urinary monomethylarsonic acid are all associated with increased risk of MGUS, suggesting a possible link between environmental exposures and this precursor condition that increases risk for blood cancer and other disorders.

Biography

Juhyun David Oh is a cancer researcher based in Seoul, South Korea, affiliated with Seoul National University. A graduate of Korea Kent Foreign School, David has conducted significant research on cancer, focusing on identifying environmental chemical exposures linked to Monoclonal Gammopathy of Undetermined Significance (MGUS), a precursor condition to certain blood cancers. David's work explores the intersections of environmental factors and cancer risk, contributing to the understanding of cancer etiology and prevention strategies. He will be presenting his latest findings on MGUS-associated chemical exposures at Cancer 2024.