PROGNOSTIC IMPLICATION OF DEL(13Q) AFTER EXPOSURE TO PESTICIDES IN NEWLY DIAGNOSED MULTIPLE MYELOMA

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Background: While conflicting data reigns over whether the development of multiple myeloma (MM) is linked to pesticide exposure, a strong link has been found between monoclonal gammopathy of undetermined significance (MGUS) and smolder MM (SMM) to MM. We postulated that exposure to pesticide may function more as a tumor accelerator than a tumor initiator. To explore this we analyzed the electronic health records (EHR) of MM patients exposed or not exposed to pesticides.

Methods: Real-world data of 2,368 MM patients was analyzed through HealthTree Cure Hub for Multiple Myeloma (healthtree.org). We assessed patient demographics (gender, race), diagnosis, and chromosomal abnormalities (CA). A two-sample t-test and two-sample t-test for proportions was used to compare differences (gender) and to test for significance (CA), respectively.

Results: Our results showed a trend ($p = 0.17$) between males and females exposed to pesticides and the average number of weeks from initial diagnosis to second diagnosis (i.e., MGUS to SMM, MGUS to MM, or SMM to MM). There were 59 females and 37 males who were exposed to pesticides and progressed. The average time to progression was 45 months in females and 32 months in males. When we analyzed CA, we found a significant difference in del(13q) between females exposed (64%) and not exposed (41%, $p = 0.001$), as well as females exposed and males exposed (39%, $p = 0.005$). There were no significant differences in all other scenarios.

Conclusion: We found that females exposed to pesticides had a higher incidence of del(13q) than non-exposed females and exposed and non-exposed males. Additionally, females exposed to pesticides with del(13q) had a longer average time to second diagnosis than males exposed to pesticides. Therefore, we suspect that there may be a beneficial nature of del(13q) and progression in females exposed to pesticides.