**Occupational exposure to pesticides and immune deregulation as risk re-stratification factors in breast cancer patients.**

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**Introduction.** Breast cancer (BC) is a heterogeneous disease in which clinicopathological features have great significance to predict patient’s prognosis and guide clinical interventions. Risk stratification is a procedure used by clinicians to guide their therapeutical decisions, divided in low, intermediate, or high risk according to clinicopathological features as age at diagnosis, breast tumor subtype, and lymph nodal invasion. The intermediate risk is a challenge for BC because the parameters used to stratify it are not well defined and may result in under-treatment. increasing the chances of recurrence or even of over-treatment, which can lead to systemic damage. Therefore, as little is known about the combined influence of classical clinicopathological factors and loco regional risk factors as environmental exposures in determining disease prognosis, the present study aims to analyze if occupational exposure to pesticides in women with breast cancer can change the risk stratification for intermediate patients. **Methods.** This study included women diagnosed with BC attended at Francisco Beltrão Cancer Hospital, Francisco Beltrão, Paraná, Brazil. All patients signed consent forms and the collection of data was approved by The Institutional Ethics Committee CAAE number 35524814.4.0000.0107. Based on the risk stratification and pesticide exposure data, patients (n = 223) were categorized as intermediate risk/exposed to pesticides (n = 77), intermediate risk/unexposed to pesticides (n = 53), high risk/exposed to pesticides (n = 56) and high risk/unexposed to pesticides (n = 37). Heparinized blood samples were collected and centrifuged for 5minutes in 4000 rpm for plasma obtention. Cytokine profiles were performed by Enzyme Linked Immuno Sorbent Assay, for TNF-$alpha$ (TNF-α), interleukin 4 (IL-4), interleukin 17 A (IL-17A) and interleukin 12 (IL-12). Oxidative stress parameters (lipid peroxidation and nitric oxide metabolites) were also measured. Data were analyzed in GraphPad Prism 7.0, and a p value < 0.05 was considered as significant. **Results.** A significant reduction of IL-12 was observed in intermediate risk patients from the exposed group when compared to the unexposed one. Oxidative stress parameters, TNF-alpha, IL-4, and IL-17 levels did not vary significantly among groups (p> 0.05). Tumor expression of the immune checkpoint CTLA-4 and transforming growth factor beta 1 (TGF-beta 1) are under investigation. **Conclusion.** Considering the relevance of IL-12 in anti-tumor responses, our data indicates that breast cancer patients classified as intermediate risk exposed to pesticides should be re-stratified as high-risk patients.

**Keywords:** Breast cancer, risk stratification, pesticides exposure.

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