بررسی اثرات یک چندان‌پوش‌سازی بر سیستم ایمنی: یک مطالعه برون‌تنی

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خلاصه:

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The effects of excess Iodine on immune system: an in-vitro study

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Abstract:

Background: The epidemiological studies have shown that the excessive iodine intake leads to autoimmune thyroid diseases with an unknown mechanism. Moreover, previous studies have shown that the disturbance in the circulating cytokines can lead to the autoimmune diseases. To determine the role of iodine in cytokine production and development of thyroid autoimmune diseases, whole blood was stimulated with NaI (10 mM) and I2 (0.5 mM).

Materials and Methods: After evaluation of the laboratory results of the 25 healthy females (aged 40-45 years), 10 subjects with the matched results were selected. Ten ml of the sterile heparinized peripheral blood was taken from each subject and immediately were divided into the 6 groups: control, NaI stimulated, I2 stimulated and matching groups in presence of the standard stimulators (LPS 1μg/ml & PHA 10μg/ml). Three identical groups were setup to investigate the cytokine production at 24, 48, and 72 hours. All samples were incubated in cell culture incubator (95% O2 and 5% CO2) and after elapse of the appropriate time, plasma separated from each well were kept at -70 ºC till the time of cytokines (IL-4, IL-10, INF-γ and TGF-β1) analysis.

Results: NaI significantly decreased the production of TGF-β1 at all time points ($P<0.02$), while it did not affect the level of other cytokines. On the other hand, I2 significantly decreased the level of IL-4 and IL-10 ($P<0.01$). In the presence of LPS/PHA, NaI also reduced the production of IL-10 ($P<0.02$), while I2 decreased the level of IL-4 as well as IL-10 ($P<0.01$).

Conclusion: Results of this study indicate that the high levels of NaI and I2 may reduce the level of the protective cytokines in circulation. Finally, since neither thyroid hormones nor thyroid glands had role in this process, it may be concluded that thyroid autoimmunity is initiated from high consumption of iodine leading to the imbalance in cytokine production.

Keywords: Thyroid autoimmunity, Iodine, NaI, TGF-β1, INF-γ, IL-4, IL-10.