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Pro-apoptosis and inflammation in autism as an emerging neuroimmune disorder

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Objectives: Autism is a developmental disorder characterized by social and emotional deficits, language impairments and stereotyped behaviors that manifest in early postnatal life.The neurobiological basis for autism remains poorly understood. However, research suggests that environmental factors and neuroinflammation, as well as genetic factors, are contributors. This study aims to test the role that might be played by IL6, TNFα, interferon-γ (IFN-γ), transforming growth factor (TGF)-β_2, heat shock protein 70 (HSP) 70 as neuroinflammatory related parameters together with caspases3 and 7 in the pathophysiology of autism.

Materials and Methods: IL6, TNFα, INF-γ TGF-β_2, HSP70 and caspases 3& 7 as biochemical parameters related to inflammation were determined in plasma of 20 Saudi autistic male patients and compared to 19 age- and gender-matched control samples.

Results: The obtained data recorded that autistic patients have remarkably higher plasma HSP70, TGF-β_2, Caspase 7 and INF-γ compared to age and gender-matched controls. INF-γ recorded the highest (67.8%) while TGF-β recorded the lowest increase (49.04%). On the other hand, IL6, TNF α and caspase 3 recorded lower values in autistic compared to controls. Receiver Operating Characteristics (ROC) analysis together with predictiveness diagrams proved that the measured parameters recorded satisfactory levels of specificity and sensitivity and all could be used as predictive biomarkers.

Conclusion: Alteration of the selected parameters confirm the role of neuroinflammation and apoptosis mechanisms in the etiology of autism together with the possibility of the use of these parameters as predictive biomarkers that could be used to predict safety, efficacy of a specific suggested therapy or natural supplements, thereby providing guidance in selecting it for patients or tailoring its dose.

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