

Summary

The study focused on investigating several parts:

The First Part of the study: deals with the clinical study that include (140) males and females' participants. The participants were divided in to two groups, the first group included (70) patient with crohn's disease, including (48) males and (22) females, and their ages ranged from 12 to 56. The second group included (70) of healthy people, (30) males and (40) females, and their ages ranged from 18 to 50. The level of muramidase, tumor nicrosis factor–alpha, Interferon – gamma, Interleukin–12, Interleukin–23, Magnesium, Copper, Calcium, Uric acid, Vitamin D3, phosphate, Iron, Selenium, Mangance malondialdehyde, glutathione peroxidase, peroxyxynitrate and catalase were estimated in the blood of patient and healthy people.

The results indicated a signifiation increase in the level of each of Muramidase, tumor nicrosis factor – alpha, interferon gamma, Interleukin–12, Interleukin–23, Copper, Uric acid Malondialdehyde and glutathione peroxidase, while there was a significant decrease in the level of each of calcium vitamin D3, Iron selenium and Manganese. As for the level of peroxyxynitrate and phosphate, there was an insignificant increax in patient with Crohn's disease compared to the healthy people.

As for the level of magnesium and catalase, no significant difference was found between the two groups.

The effect of some rick factors was also studied, so we study the effect of age on the studied biochemiacs parameters in the disease group. It was noted that there was significant difference appeared in the level of muramidase ,vitamin D3 and copper among the different age group,no significant difference was observed in the level of the rest biochemical parameters between the age groups studied.

The effect of body mass index (BMI) on the levels of biochemical parameters was studied in the group of patients. It was observed that there was a significant increase in the level of muramidase and uric acid in the group of patients with high BMI compared to those with normal weight, and a significant decrease in the level of catalase enzyme in patients with increased BMI. As for the remaining parameters, no significant differences were observed.

As for the effect of smoking on the biochemical parameters measured in patient group, it was noted that there was a significant increase in the level of porxytrate and malondialdehyde, and a significant decrease in the level of phosphate in the smoking group compared to non – smokers, there was no significant effect of smoking on the rest of measured biochemical parameters.

Furthermore, the study examined the effect of family history on the levels of the studied biochemical variables. It was observed that there was significant difference in the level of the muramidase among the group of Crohn's disease patients who had a family history of the disease compared to those patients with no family history.

As for the remaining variables, the differences between the two groups were not significantly difference.

Furthermore, the effect of disease duration was studied. A significant increase in the level of muramidase was observed, along with variations in the results of the other measured biochemical parameters as the disease duration progressed.

Additionally, the relationship between muramidase and the other measured biochemical parameters was studied in the group of patients with Crohn's disease. It was observed that there was a significant positive correlation between muramidase and each of the following: Interferon-gamma ,Interleukin-12, Interleukin-23, and Glutathione Peroxidase.

Conversely, the relationships between muramidase and the following parameters were positive but not significant: Malondialdehyde, Uric Acid, Phosphate, Copper, Magnesium, Tumor Necrosis Factor-alpha, and Peroxynitrate.

Finally, the relationships between muramidase and the following variables were negative but not significant: Vitamin D3, Calcium, Iron, Selenium, Manganese, and Catalase

The second part of study: include molecular purification of muramidase from of blood serum of patient suffering of Crohn's disease. Several purification procedures were applied, starting with precipitation with ammonium sulphate, Dialysis and ion exchange chromatography was done and it was found that the mermaids have one isoform when using ion exchange technique. The highest concentration of the enzyme in band (A) (15.6) pg/ml, the purity of band was studied and the molecular weight of the enzyme was estimated using the electrophoresis technique. A single band was obtained when applying the electrophoresis was applied to the enzyme purified by the ion exchange technique.

The third part of the study: included genetic study of Muramidase gene in patient with Crohn's disease, where it was found that all study samples showed an increase in gene expression levels. This was associated with elevated muramidase enzyme levels in patients with Crohn's disease. In addition, DNA sequencing was performed, and genetic mutations were observed that caused a defect in gene expression values, which led to an increased in the production of the enzyme.

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**Isolation and Evaluation of Level of Muramidase
and some Biochemical Parameters in Patient with
Crohn's Disease in Mosul City**

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