CD3, CD4 and CD8 in Children with Chronic Diarrhea

Zeinab A El-Sayed [1], Maha M Awadalla [1], Rasha H El-Owaidy[1], Lamis M Tawfik [2], Mohab M Zekry [3]

[1]Departments of Pediatrics and [2]Clinical Pathology Faculty of Medicine, Ain Shams University, Cairo, Egypt.

[3]Department of Pediatrics, Faculty of Medicine, Assuit University, Assuit, Egypt.

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Background

The diagnosis of inborn errors of immunity (IEI) requires a high index of suspicion. Severe defects in T cell number and/or function result in increased susceptibility to severe infections early in life, the commonest of which is chronic diarrhea. Chronic diarrhea in disorders with inborn errors of immunity might occur either due to infection, malignancy, inflammatory, and/or autoimmune disorders.

Purpose:

We aimed to investigate T cell immunodeficiency in Egyptian children with chronic diarrhea (defined as loose or watery stools occurring at least three times a day for more than 14 days) through assessment of CD3, CD4 and CD8 cells

Methods:

Thirty children with chronic diarrhea (17 males and 13 females with their ages ranging from 13 to 38 months (mean age 23.03± 7.77 months) were investigated in comparison to 20 healthy controls (11 males and 9 females with their ages ranging from 13 to 38 months and a mean age of 25.4± 8.86 months). For all subjects, complete blood counts and flow-cytometric analysis of CD3, CD4 and CD8 were done using Coulter Epics XL flowcytometer .

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Results:

Among patients' group, five patients had decreased CD3, CD4 and CD8 percentages and counts and CD4/CD8 ratio. In comparison to controls, patients with chronic diarrhea had significantly higher mean white blood cells counts (mean ± SD = 13.4 ± 2.5 109/L), lower lymphocytic count (mean ± SD = 3.8 ± 1.7 109/L), lower CD4 and CD8 percentages, lower CD3 counts (mean ± SD = 2.5 ± 1.2 109/L), lower CD4 counts (mean ± SD = 1.4 ± 0.7 109/L) and CD8 counts (mean ± SD = 1 ± 0.5 109/L) and lower CD4/CD8 ratio. T cell counts and CD4/CD8 ratio correlated negatively with duration of diarrhea and number of previous repeated infections per year and positively with weight percentiles.

Conclusion:

A significant proportion of infants and young children suffering chronic diarrhea (one sixth in our series) have decreased lymphocyte counts with obvious decrease in the number of T lymphocytes and the CD4 and CD8 T lymphocyte subsets. Whether this is secondary to their intestinal disease, or a feature of an underlying immunodeficiency requires further investigation and follow-up of those patients.

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