Internal Medicine

CD4^+CD25^{high}FOXP3 T regulatory cells frequency in chronic spontaneous urticaria

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Background: Chronic urticaria, a common distressing skin disorder, is idiopathic in up to 90% of cases and referred to as chronic spontaneous urticaria (CSU). About 30-50% of CSU patients have an autoimmune basis. Recent discoveries displayed a major role of the naturally occurring CD4^+CD25^+ regulatory T cells in autoimmune diseases. A new key finding that elucidates the role of Tregs in maintaining self-tolerance is that they specifically express Forkhead box P3 transcription factor (FoxP3), which controls their development and function.

Objective: Evaluate the frequency of peripheral CD4^+CD25^{high}FOXP3 (Tregs) in CSU patients (a subpopulation of Treg cells) in chronic spontaneous urticaria, and to determine whether it differs in patients with positive autologus serum skin test (ASST) from those with negative test.

Methods: Peripheral blood mononuclear cells (PBMCs) were obtained from 50 CSU patients and 20 healthy controls. Flow cytometric analysis was done using specific monoclonal antibodies recognizing CD4^+, CD25^+ and FOXP3^+ markers.

Results: Percentages of circulating CD4^+CD25^{high}FOXP3 (Tregs) were significantly lower in CSU patients compared to healthy controls (median [IQR], 1.47% [0.71–3.12] vs 1.79% [1.15–4.00]; \(P = 0.05\)), whereas no significant difference (\(P = 0.112\)) was observed between ASST positive and ASST negative patients.

Conclusion: Our data revealed reduced frequency of CD4^+CD25^{high}FOXP3 (Tregs) in CSU patients whether ASST positive or ASST negative. These findings support the concept of immune dysregulation in this disease entity, and provide potential therapeutic approaches for the treatment of CSU by increasing CD4^+CD25^{high}FOXP3 (Tregs).

Chemotherapy induced cognitive impairment in hematological malignancies

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Background: Chemotherapy-induced cognitive impairment (CICI) is one of the most prominent side effect as it negatively impact activities of daily life of the patients. These problems can range from subtle to severe and last for months or years after treatment. As cognition is an important predictor of survival in patients with hematological malignancies, understanding factors that lead to CICI in hematological malignancies warrants attention.

Patients and Methods: A cross-sectional study that was conducted at Clinical Hematology Department in Ain Shams University Hospital during a period from March 2017 to September 2017. We studied the prevalence of cognitive impairment among treated patients with chemotherapy for hematological malignancy; and we described its correlation to demographic data and risk factors. Test of cognitive function has been done by Montreal Cognitive Assessment (MoCA).

Results: The average scores of Montreal test for all patients was 23.913 ± 3.997. Out of 150 patients with different hematological malignancies that finished their chemotherapy at least 6 month ago and underwent (MoCA); we found that 93 patients (62%) were cognitively impaired, CICI is more among patients that received parenteral chemotherapies and closely related to pre-medication comorbidities, all patients with Myelodysplastic syndrome (MDS) were cognitively impaired. Also There was a positive correlation between patients age and cognitive impairment, as mean age of patients with abnormal cognitive function was 51.15±9.933 (p value <0.001); while Period of hospital admission was showing significant correlation with impaired abstraction function (p value 0.003), and number of chemotherapy cycles showed significant correlation with naming and orientation cognitive impairment (p value 0.029, 0.022 respectively). We found also that female patients had significant defect in naming component more than male (p value 0.009). The type of chemotherapy regimen received was not significantly affected the overall cognitive impairment, but patients that had received velcade (bortezomib) based chemotherapy had significantly lower executive and abstraction function with (P-value 0.026). Patients who did not achieve remission at follow up have markedly significant lower scores of most of cognitive functions.

Conclusion and Recommendation: CICI is a major problem in patients with hematological malignancies post chemotherapy that can affect their quality of life so regular follow up of the cognitive functions in those patients for early intervention with Proper management of risk factors are recommended.

Prevalence of allergens sensitization among adult chronic urticaria patients without other allergic diseases

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Background: Chronic Urticaria (CU) is a diseases characterized by occurrence of spontaneous wheals observed by the patient for more than 6 weeks duration. The prevalence of CU varies from 0.5-5% in adult population. This is a disease of complex etiologies with more areas to be explored by researches. Aim of the study: To detect the Prevalence of allergens sensitization among adult chronic urticaria patients without other allergic diseases

Methods: This study is a cross-sectional case control study. 70 patients with CU without evident cause and 50 healthy control individuals were included in the study. Patients with any other allergic diseases (such as Asthma, allergic Rhinitis, Allergic Conjunctivitis, Drug Allergy, atopic Dermatitis, Anaphylaxis ...), patients with other chronic or systemic
Diseases (such as cardiac, respiratory, renal, hepatic, hematological, thyroid or other skin Diseases, etc...) and smokers were excluded from the study. Each patient and control individual was subjected to full medical history, complete medical examination and routine lab test. Determination of allergen-specific IgE (for 20 separate food and 20 aeroallergens) in serum for the patients was done by using EUROLINE Atopy Screen.

**Results:** Each of the patients and control groups were comparable according to age and gender. There was a significant difference between the CU patients and the control group as regard the prevalence of any allergen sensitization (65.7% for CU patients and 18% in control group) p < 0.05. There was also a significant difference between the sensitized individual in each group as regard the number of allergens per each individual; for sensitized CU patients the mean was 3 allergens and interquartile range was (2-4), for the sensitized control individuals the mean was 2 and interquartile range was (1-2) with p = 0.014. The mostly frequent allergens were found in the CU sensitized patients was the house dust mite allergens (34.8% of the sensitized CU patients were sensitized to one or more of the two types of mites; dermatophagoides pteronyssinus and or dermatophagoides farinae).

**Conclusion:** A great prevalence of CU patients proved to be sensitized to common allergens which open the door to start a trials to use specific allergen immunotherapy in this group of patients.

**Flow cytometric assessment of CD30 expression in adult patients with acute leukemia**

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**Background:** CD30, a member of (TNFR) superfamily, was originally identified as a cell-surface marker of Reed-Sternberg cell in classical Hodgkin Lymphoma, CD30 is also expressed by Several types of T- and B-cell non-Hodgkin’s Lymphoma, such as anaplastic large cell lymphoma (ALCL), primary mediastinal large B-cell lymphoma (PMBCL) and Epstein-Barr-Virus (EBV)-driven clonal lymphoproliferative disorder as well as in reactive conditions such as infectious mononucleosis.

**Patients and Methods:** A cross-sectional study that was conducted at Clinical Hematology Department in Ain Shams University Hospital during a period from November 2016 to August 2017. 20 new cases of AML and ALL, 30 refractory or relapsed cases of AML and ALL either T or B were enrolled in this study, CD30 % expression was assessed by flow cytometry on bone marrow sample or peripheral blood.

**Results:** CD30 with cutoff >20% (+ve) was 46% of cases while cases with cutoff <20% (-ve) was 54% in all leukemia cases, CD30 expression was higher in ALL especially in T-ALL with a mean value of (44.56 ± 27.158) with significant increase in relapsed T-ALL (P value 0.031) followed by B-ALL (23.988 ± 15.678). CD30 expression in relapsed AML and ALL was increased but not yet statistically significant. Significant correlation was found in risk parameters as in WBCs (>100,000), PLT (>30,000) and CD30 expression in T ALL patients with P value (0.038 and 0.021) respectively, and non significant between LDH and MRD in T-ALL and all risk parameters in B-ALL. ROC curve revealed that the accuracy of sensitivity and specificity was 69.9%.

**Conclusion:** CD30 has been shown to be a significant diagnostic tool in cases of acute leukemia especially in newly and relapsed T-ALL, also it can be labeled to be targeted therapy, Drug trial using monoclonal AB to CD30 as treatment in relapsed/refractory cases with special concern to response and survival rate.

**Expanded peripheral CD4⁺CD28null T cells and its association with atherosclerotic changes in patients with end stage renal disease on hemodialysis**

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**Background:** End-stage renal disease [ESRD] patients, including those on hemodialysis, possess a high risk for cardiovascular diseases, as the first leading cause of death among them. Traditional risk factors do not utterly elucidate this. Throughout the last two decades, CD4⁺CD28null T cells; an unusual cytotoxic subset of T lymphocytes, was detected high in a variety of chronic inflammatory diseases associated with excess cardiovascular (CV) mortality.

**Objective:** To investigate circulating CD4⁺CD28null T cells frequency in ESRD patients on hemodialysis and to evaluate their relationship with atherosclerotic changes.

**Methods:** High-resolution carotid ultrasonography was done to assess the common carotid artery intima media thickness in a number of ESRD patients, accordingly patients were selected and subdivided into two groups; 30 with atherosclerosis (mean [SD] age, 51.6 [6.3] years) and 30 without (mean [SD] age, 48.9 [5.5] years). Another 30 healthy individuals (mean [SD] age, 48.5 [6.8] years) were enrolled. Analysis of CD4⁺CD28null T-cell frequency by flow-cytometry was performed in all studied subjects.

**Results:** CD4⁺CD28null T cell percentage was significantly higher in ESRD patients, (mean [SD], 7.3 [2.7] %) compared to healthy individuals (mean [SD], 3.0 [0.8] %), (p < 0.001). Additionally, the expansion of these unusual T lymphocytes was significantly higher in ESRD patients with atherosclerotic changes (mean [SD], 9.47 [0.75] %) compared to those without atherosclerosis (mean [SD], 5.22 [2.14] %), (p < 0.001).

**Conclusion:** Expanded circulating CD4⁺CD28null T lymphocyte population in ESRD patients, in correlation to atherosclerotic changes.