Zloza and Al-Harthi reported that the expression of invariant and non-invariant NKT markers was most prominent in the $CD4^{bright}CD8^{dim}$ subpopulation [5]. In one study, up to 29% of cells were found as invariant CD3+6B11+NKT cells and up to 26% as non-invariant CD3+CD16/56+NKT cells [4]. It was also stated that the combination of cell populations not sharing similar features, expressing differentiation and activation of surface markers, and not consuming contaminating cell populations such as NKT cells would mask CD4+CD8+ T-cell subpopulation analyses [5].

Keywords: CD4+CD8+ Double-positive T-lymphocytes, Pitfalls

Anahtar Sözcükler: CD4+CD8+çift pozitif T-lenfositler, Tuzaklar

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In Reply to: CD4+CD8+ Double-Positive T-Lymphocytes: Pitfalls

CD4+CD8+ Çift Pozitif T-Lenfositleri: Görünmez Tehlikelere Yanıt Olarak

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To the Editor,

It was with great interest that we read the recent reply to our published article. Although the effects of nicotine on the immune response have been described in some regards, we do not know its influence on double-positive T lymphocytes (CD4+CD8+ or DPTs). Our study included volunteers from the Colombian Red Cross who underwent screening as blood donors; however, their smoking status was not evaluated [1].

In the reply to our article, it was advised that the potential phenotypic overlap of natural killer T (NKT) cells with the DPT subpopulation be studied in our cohort. It was mentioned that CD45, a well-known pan-leukocyte marker, could be a possible part of the phenotypic panel. Nonetheless, CD45 would not discriminate between different white cell lineages. NKT cells are a subpopulation of T cells expressing CD16/CD56+ that are CD4+CD8+ double-positive cells during their thymic selection [2]. Therefore, NKT cells that have prematurely escaped from the thymus could explain, to some extent, the presence of NKT double-positive cells in the peripheral blood.

Zloza et al. [3] described 6 different subpopulations of CD3+ T cells according to the intensity of CD4 and CD8 expression. In that study, they also showed the presence of invariant NKT (CD3+CD6B11+) and non-invariant NKT (CD3+CD16/56+) cells as part of DPTs, mainly in the $CD4^{bright}CD8^{dim}$ subpopulation. Interestingly, activation-induced expression of CD56 by CD8+ T cells has been described, and it is associated with a reprogramming of the cytolytic activity and cytokine secretion profile in vitro [4]. Furthermore, CD56 is expressed by CD4+ T cells under certain pathological conditions [5]. Due to the complexity of marker expression on these T cell subpopulations, it seems necessary to sort them and to study their gene expression profiles to define specific DPT subpopulations. Nonetheless, it is reasonable to consider that a low percentage of NKT cells could be present in DPTs, but the percentage should be lower than 26% [3].

Keywords: Double-positive T-lymphocytes, Flow cytometry, Natural killer T-cells

Anahtar Sözcükler: Çift pozitif T-lenfositleri, Akış sitometrisi, Doğal öldürücü T-hücreleri

Informed Consent: Not applicable.

Authorship Contributions

Concept: M.S.G., J.M.G.; Analysis or Interpretation: M.S.G., J.M.G.; Literature Search: M.S.G., J.M.G.; Writing: M.S.G., J.M.G.

Conflict of Interest: The authors declare no conflict of interest.

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Vaccination and Thrombotic Thrombocytopenic Purpura

Aşılama ve Trombotik Trombositopenik Purpura

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To the Editor,

The article entitled "Diagnostic Testing for Differential Diagnosis in Thrombotic Microangiopathies," written by Zini and De Cristofaro [1] and published in one of the recent issues of your journal, was quite interesting. Herein, I wish to contribute to that article.

In the adult age group, vaccines did not contribute to the development of immune thrombocytopenia (ITP), but an increase was reported in diphtheria-tetanus-pertussis-poliomyelitis vaccines without statistical significance [2]. Immune-origin thrombocytopenia may be developed after many vaccines such as measles-mumps-rubella and varicella, polio, rabies, and meningococcal C, especially in childhood. This occurs with 1-3/100,000 vaccine doses. Molecular mimicry theory is thought to play a role in the development of ITP [3]. In adult cases, development of thrombocytopenic thrombotic purpura (TTP) has been reported with some vaccines [4,5,6,7,8,9]. These cases

Table 1. TTP cases developed after vaccination in the literature.

Vaccine type	n	Age (years)	Sex	Time of development	Literature
Rabies	1	28	Male	14th day	Kadikoylu et al. [4]
Pneumococcal	1	68	Female	15th day	Kojima et al. [5]
Influenza	1	Unknown	Unknown	Unknown	Ramakrishnan and Parker [6]
Influenza	1	54	Male	5th day	Dias and Gopal [7]
H1N1	1	56	Male	13th day	Hermann et al. [8]
Influenza	1	23	Female	14th day	Brown et al. [9]