Polyarteritis Nodosa Mimicking Peripheral Vascular Disease

To the Editor:—With great interest I read the paper by De Golovine et al. ¹, who reported on a case that illustrates the challenges in diagnosing polyarteritis nodosa (PAN). The characteristic sign, defined as arteritis in small and medium-sized arteries ², needs a biopsy from a diseased artery. Since PAN can be life threatening ¹, a delay of the correct diagnosis could be fatal. Therefore, a characteristic biomarker that can be easily screened in peripheral blood samples would be much more helpful than a biopsy. An interesting personal observation prompted me to present a male patient with a severe biopsy-proved PAN³ who fulfilled the American College of Rheumatology 1990 criteria ⁴. Flow cytometry with direct fluorochrome labelled monoclonal antibodies revealed increased absolute counts of total CD4+ cells and their CD45RO+RA- and CD45ROdim RAdim subsets that were absent in both healthy controls and patients with vasculitis others than PAN (Table 1). But there were no significant differences for total T-cytotoxic cells (CD3+CD8+), CD8+CD45ROdimCD45RAdim, CD8+CD45RO+CD45RA-, and CD8+CD45RO-CD45RA+ cells (Table 1).

CD95 expression on total CD3+, CD3+CD4+, and CD3+CD8+ cells did not differ significantly among controls, PAN, and other inflammatory vessel diseases (data not shown).

Upon the CD45 isoforms RO and RA T-helper cells can be divided into two subgroups namely CD45RO+CD45RA- (memory

and CD45RO-CD45RA (naïve) cells ⁵. In healthy adults most of the CD4 cells are memory cells (~ 75%), while only a small proportion expresses the naïve pattern. Concomitant loss of CD45RA expression and gain of CD45RO expression occurs during transition from naïve to memory status ⁵. Thus, following in vitro activation of CD45RO-CD45RAbright T cells, a subset of transitional CD45ROdimCD45RAdim T cells is observed before conversion to a CD45RObrightCD45RA- phenotype is completed ⁵. Although all three of these phenotypic subsets are represented in the circulating human lymphocyte pool ⁵, increased values of intermediate expression pattern with CD45ROdim and CD45RA-dim are typically for cord blood, representing the immature nature of cells ⁶. In postpartal life increases of double positive (CD45RO+RA+) cells have rarely been described ⁷⁻⁹.

The presented data provide evidence for the notation that increased absolute counts of CD4 cells, memory T-helper cells (CD4+CD45RO+RA-), and the intermediate form of T-helper cells (CD4+CD45ROdimRAdim) in peripheral blood specimens seem to be associated with PAN. Although currently it is not clear what this finding means, it underscores the systemic nature of the disease. Since the results of the mentioned parameters are quickly available, they seem to be suitable as a screening test to make a rough estimate. Further investigations are warranted to further elucidate this exciting topic in larger patient groups in future.

Table 1. Total T-helper (CD4) and T-cytotoxic (CD8) Cell Population and Their CD45RO CD45RA Subsets (in Cells/μl) in Twelve Healthy Controls, Eight Patients with Vasculitis, and in a Patient with PAN (Values Have Been Obtained by Flow Cytometric Analysis on Three Occasions)

Cell subset	Controls	Vasculitis	PAN	Controls vs. PAN	Vasculitis vs. PAN
CD4	740.2±326.6	608.8±429.3	1427.3±229.8	P<0.03	P<0.05
CD45RO+RA-	411.5±227.8	384.0±261.0	936.3±103.3	P<0.04	P<0.03
CD45RO+RA+	142.6±84.2	101.9±58.9	310.0±111.0	P<0.04	P<0.03
CD45RO-RA+	162.3±89.9	120.9±128.8	176.7±91.7	n.s.	n.s.
CD8	532.4±180.6	333.8±205.1	395.3±103.6	n.s.	n.s.
CD45RO+RA-	206.9±83.6	120.1±69.1	207.0±12.3	n.s.	n.s.
CD45RO+RA+	90.3±94.5	86.8±59.6	56.0±27.1	n.s.	n.s.
CD45RO-RA+	219.3±85.7	126.6±108.2	131.3±64.7	n.s.	n.s.

CD45RO+RA- comprise of CD45RObright cells lacking CD45RA, CD45RO+RA+ reflect CD45ROdim CD45RAdim cells, and CD45RO-RA+ means CD45RAbright cells that did not express CD45RO. The values represent means±SD. Differences between means have been tested by the Mann-Whitney U-test. P values<0.05 were considered to be statistically significant

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J Gen Intern Med 23(12):2157–8

DOI: 10.1007/s11606-008-0795-6

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Published online October 2, 2008