

## T and B lymphocyte subsets are differentially affected in Anorexia Nervosa diagnostic subtypes

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Anorexia nervosa (AN) patients suffer from atypical states of malnutrition that have been shown to impair the immune system as manifested by reduced T lymphocyte numbers compared to healthy peers. This decrease occurs despite the adaptation mechanism directed to preserve cellular immunity through relative lymphocytosis<sup>(1)</sup>. B lymphocytes are usually not affected<sup>(1)</sup>. These findings however are not always consistent and might, at least in part, depend on the subtype of AN<sup>(1)</sup>. This study is aimed at the evaluation of the lymphocyte subset profile in the two diagnostic subtypes of AN and EDNOS (eating disorders not otherwise specified)<sup>(2)</sup>. 36 adolescents with AN (12–17 y) and 12 adolescents with EDNOS were studied. Within AN patients, 29 were diagnosed as restricting type (AN-R) and 7 as binge eating/purging type (AN-P). All patients were recruited for the study upon admission for treatment in a specialized eating disorders unit. All patients received multidisciplinary treatment including nutritional rehabilitation and refeeding together with group, familiar and individual psychotherapy. The lymphocyte subset profile was studied upon admission (T0) and after one month of treatment (T1). The following lymphocyte subsets (percentages and absolute values) were assessed by four-colour immunostaining of membrane markers and flow cytometry (FacsScan, BD): CD3+, CD4+, CD8+, (naïve [CD45Ra+] and memory [CD45RO+] distribution), CD3<sup>-</sup>CD16+CD56+ (NK) and CD19+. Differences among eating disorder subtypes were assessed through Kruskal-Wallis analyses for each lymphocyte subset.

The mean BMI values of patients at admission were as follows: AN-R: 15.7±1.6; AN-P: 16.5±0.7; EDNOS: 17.8±2.4. Only the BMI values for AN-R and EDNOS were significantly different. Regarding lymphocyte subset analyses, the relevant results are shown in the table below.

	T0				T1			
	AN-R	AN-P	EDNOS	P <sup>a</sup>	AN-R	AN-P	EDNOS	P <sup>a</sup>
Lymphocytes*	2347±67	1731±43	2139±50	0.09	1965±53	1719±53	1943±27	0.29
Lymphocytes#	41±8	33±5	38±13	0.12	35±7	32±3	32±6	0.27
CD3+#	68.5±4.8	74.6±4.2	66.4±7.3	0.022	68.8±7.5	76.1±3.7	66.6±4.5	0.002
CD4+#	41.0±5.1	46.7±6.1	38.9±7.9	0.055	42.2±5.0	47.6±5.1	40.3±3.9	0.04
CD3+CD8+CD45RA+#	61.2±12.0	74.6±10.2	63.0±16.2	0.038	62.3±10.2	71.2±12.1	59.3±15.4	0.116
CD19+#	13.6±4.3	9.9±1.5	12.3±5.4	0.095	11.8±3.0	8.5±2.5	12.3±3.6	0.036
CD19+*	321±140	169±40	275±184	0.007	232±84	151±76	243±89	0.085

Mean±SD. <sup>a</sup>Kruskal-Wallis test; \* cel/μL; # %

Differences found among eating disorder subtypes showed a higher percentage of CD3+ and CD4+ T cells and a lower percentage of CD19 cells in the AN-P group than the AN-R group. The absolute number of CD19+ cells was also significantly lower in the AN-P group compared to the other groups on admission. These findings tended to persist after one month of treatment. Patients diagnosed with EDNOS showed a very similar lymphocyte profile to that of AN-R patients both on admission and after one month. In conclusion, our results show that, in contrast with AN restricting subtype, in the binge eating/purging subtype the attempts to preserve normal T cell numbers occur with a decrease in B cells. The bingeing plus compensatory behaviors might impose a more demanding situation over the immune system in these patients.

This study received funding from the Spanish Ministry of Health (FIS PI08/1832) and the Alicia Koplowitz Foundation.

1. Nova E & Marcos A (2006) *Expert Rev Clin Immunol*, 2, 433–44.
2. American Psychiatric Association (2000) *Diagnostic and Statistical Manual of Mental Disorders*, 4<sup>th</sup> edition.