Table S1. B cells disturbances in APS according to previous literature.

Author	N of patients	Material and Methods	B cells	Results
Carbone (1) 2009	36 women with pAPS : 26 obstetric APS without thrombosis (A1) and 10 obstetric APS with thrombosis (A2) 36 women with spontaneousrecurrent abortion without aPL (B) 36 healthy parous women (C) 36 healthy non parous women (D)	- Three colour inmunophenotyping of peripheral blood lymphocytes (EDTA). Whole Blood Lysis technique. - mAb: CD27 / IgD / CD19 - Acquisition: 5000 events in a lymphocyte gate. FACScan.	- Naïve (CD19+ CD 27- IgD+) - Memory B cells (class switched CD 19+CD27+IgD- and non-class-switched CD 19+ CD27+IgD+)	- No differences in the number and frequency of CD19+ B cells among groups A2: increased frequency and absolute numbers of naïve cells compared to A1 and controls. A2: lower percentage of memory class-switched and non-class switched than A1 and controls. Higher naïve/memory class-switched ratio in A2 compared with controls.
Dal Ben (2) 2013	20 pAPS and 20 HC (85%females)	PBMCs resuspended in RPMI+FBS and treated with FC blocking. Immunophenotyping with CD3 and CD19. - Acquisition 20000 cells. FACs Canto II. Software analysis: Flow Jo.	CD 3-CD19+ B cells	- Lower percentages of total lymphocytes in APS than controls - Lower percentages of CD3-CD19+ B cells in APS than controls.
Dal Ben(3) 2014	25 APS related SLE and 25 HC 96 % females	No data	CD3- CD19+ B cells	- No differences of total lymphocytes - Lower numbers of CD3-CD19+ B cells in APS related SLE than in HC
Simonin(4) 2017 .	11 pAPS VTE (54.5 % females) 11 nonAPS VTE 49 controls (OA) 11 SLE/11 RA/11pSS	- Four colour inmunophenotyping of peripheral blood lymphocytes (EDTA). Whole Blood Lysis technique. - mAb: CD5/ CD27 / IgD / CD19/CD 38/ CD24/ - Acquisition 175.000 cells Gating lymphocytes. - Beckman Coulter flow cytometer. (Navios + Kaluza)	B1 cells (CD19+ CD 5+) Transitional B cells (CD19+ CD24++ CD 38++) Naïve B cells (CD19+ IgD+CD27-) Unswitched memory B cells (CD 19+ IgD+ CD27+) Switched memory B cells (CD19+ IgD- CD27+) Double negative B cells (CD19+IgD-CD27-)	- No differences in the frequency of CD19+B cells in pAPS VTE compared to controls and SLE - Increase in percentage of B1 cells in pAPS VTE compared to non-APS VTE but not with controls. - Increase in number and frequency of transitional B cells in pAPS VTE compared to nonAPS VTE and controls. - Increase number but not frequency of naïve B cells in pAPSVTE compared to nonAPS VTE. No differences compared to controls.

				- No differences in the frequency of unswitched compared to nonAPS VTE and controls Decrease number and percentage of SM B cells in pAPS VTE compared to controls. No differences in the frequency of CD19+B cells in pAPS VTE compared to controls and SLE Increase in number and frequency of naïve B cells in pAPS VTE compared to SLE and RA.
Present study	37 pAPS (17 Obstetric pAPS, 20 Trombotic pAPS) 11 SLE 21 HC	- Six colours immunophenotyping of PBMCs - mAb: CD19, CD5, CD10, IgD , CD27, CD24 and CD38, IgM. Immunophenotyping500.000 cells/sample. - Acquisition 50000 cells. FACs Canto II. Software analysis: FACS Diva Gating CD19+ cells Absolute numbers and % of lymphocytes by Multitest TruCount method (BD)	Immature($CD19^{+}CD5^{+}CD10^{+}$ $CD27^{-}IgD^{++}$ $CD24^{hi}$ $CD38^{hi}$). - Naïve ($CD19^{+}$ $CD5^{+/-}$ $CD10^{-}$ $CD27^{-}IgD^{+}$ $CD24^{int}$ $CD38^{low/-}$). - Non-switched memory ($CD19^{+}$ $CD27^{+}IgD^{+}$ $CD38^{-}$ IgM^{+}), - Switched memory ($CD19^{+}$ $CD27^{+}IgD^{-}$ $CD38^{+}IgM^{+/-}$), - Doubles negatives ($CD19^{+}$ $CD27^{-}IgD^{-}$ $CD24^{-}$ $CD38^{-/+}$ IgM^{-}) - Plasma cells ($CD19^{lo}$ $CD27^{hi}IgD^{-}$ $CD38^{hi}$ $CD138^{-/+}$).	- No differences in the number and frequency of CD19+ B cells among three groups. - Lower percentage ofimmature and naïve B cells in pAPS than SLE, especially in obstetric pAPS .No differences between thrombotic pAPS and SLE or HC. - Higher frequency of non-switched memory cells in obstetric and thrombotic pAPS than SLE.No differences between pAPS and HC. - No differences in frequencies of switched memory and plasma cells among three groups. - SLE increased frequency of naive and decreased frequency of non switched memory compared to HC - Higher double negative memory B cells in SLE than HC but not in pAPS

pAPS: primary antiphospholipid syndrome, opAPS: obstetric primary antiphospholipid syndrome, SLE: systemic lupus erythematosus, HC: healthy controls, OA: ostheoarthritis, RA: rheumatoid arthritis, pSS: primary Sjogren syndrome, VTE: venous thromboembolism.

Reference List

(1) Carbone J, Gallego A, Lanio N, Navarro J, Orera M, Aguaron A et al. Quantitative abnormalities of peripheral blood distinct T, B, and natural killer cell subsets and clinical findings in obstetric antiphospholipid syndrome. J Rheumatol 2009; 36(6):1217-1225.

(2) Dal Ben ER, Do Prado CH, Baptista TS, Bauer ME, Staub HL. Decreased levels of circulating CD4+CD25+Foxp3+ regulatory T cells in patients with primary antiphospholipid syndrome. J Clin Immunol 2013; 33(4):876-879.

(3) Dal Ben ER, Do Prado CH, Baptista TS, Bauer ME, Staub HL. Patients with systemic lupus erythematosus and secondary antiphospholipid syndrome have decreased numbers of circulating CD4(+)CD25(+)Foxp3(+) Treg and CD3(-)CD19(+) B cells. Rev Bras Reumatol 2014; 54(3):241-246.

(4) Simonin L, Pasquier E, Leroyer C, Cornec D, Lemerle J, Bendaoud B et al. Lymphocyte Disturbances in Primary Antiphospholipid Syndrome and Application to Venous Thromboembolism Follow-Up. Clin Rev Allergy Immunol 2016; 3878: 1-14.

Table S2. Imunophenotyopic characterization of B cell subsets.

Immatures	$CD19^{+}$ $CD5^{+}$ $CD10^{+}$ $CD27^{-}$ IgD^{++} $CD24^{hi}$ $CD38^{hi}$
Naïve	$CD19^{+}$ $CD5^{+/-}$ $CD10^{-}$ $CD27^{-}$ IgD^{+} $CD24^{int}$ $CD38^{-}$
Non switched memory	$CD19^{+}$ $CD27^{+}$ IgD^{+} $CD38^{-}$ IgM^{+}
Switched memory	$CD19^{+}$ $CD27^{+}$ IgD^{-} $CD38^{-/+}$ $IgM^{+/-}$
Doubles negatives	$CD19^{+}$ $CD27^{-}$ IgD^{-} $CD24^{-}$ $CD38^{-/+}$ IgM^{-}
Plasma cells	$CD19^{lo}$ $CD27^{hi}$ IgD^{-} $CD38^{hi}$ $CD138^{-/+}$