Predictors of avascular bone necrosis in systemic lupus erythematosus and antiphospholipid syndrome

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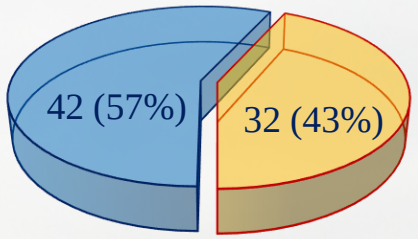
Background. Avascular bone necrosis (ABN) was described in systemic lupus erythematosus (SLE) and antiphospholipid syndrome (APS) in the absence of corticosteroid use and without any other causes.

The aim: to determine the factors lead to ABN in APS and SLE patients.

Material and methods.
The study included 74 patients: 54 females and 20 males in the middle age of 46 ± 10 years.
Middle disease duration and duration of the followed-up period were 22 [16; 34] and 13 [10; 16] years respectively.
At the beginning of the observation 3 (4%) SLE+APS patients have already had 1 ABN.

Figure 1. Patients disposition



Anticardiolipin antibodies (aCL), anti-beta2-glycoprotein 1 antibodies (aB2GP1) were assessed in all patients. Lupus anticoagulant (LA) was estimated in 35/74 (47%) patients who did not receive anticoagulants at the time of admission to the hospital.

Thromboses in past history were found in 65/74 (88%) pts: in 17/65 (26%) – arterial (AT), in 28/65 (43%) – venous (VT), in 20/65 (31%) – AT+VT. 15 of 42 (36%) women who were pregnant during the disease had fetal loss.

Traditional risks factors of thrombosis such as dyslipidaemia, taking oral contraceptives, surgical operations and traumas in history, fat diet, low physical activity, varicose vein disease and also inherited thrombophilia, glucocorticoid use (integrated dose, average dose of prednisone), abusive drinking behavior, SLE activity and therapy were registered in medical records.

Results: During the followed-up period 8 (10%) patients developed ABNs (the first 3 patients had the second ABN): 7 SLE+APS and 1 PAPS. The femoral head was the most commonly affected site: 5/8 (63%) patients had ABN of both femoral heads.

Figure 2. Disease duration (DD) in patient with and without avascular bone necrosis

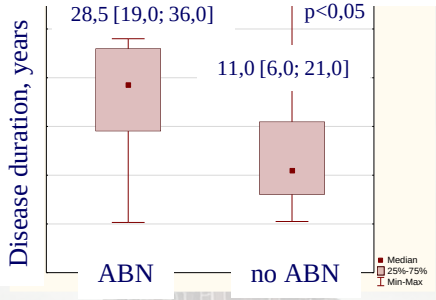
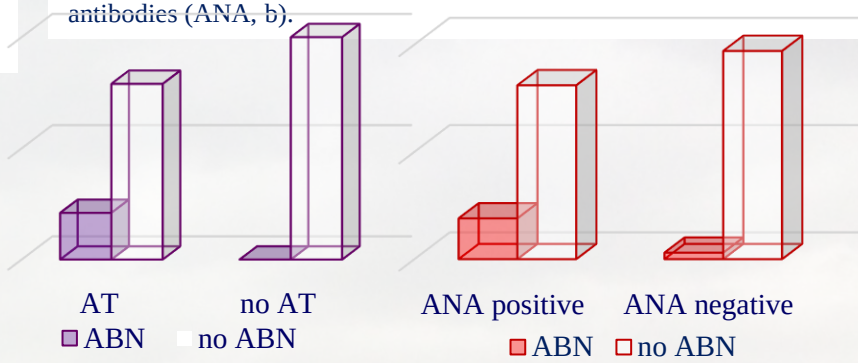
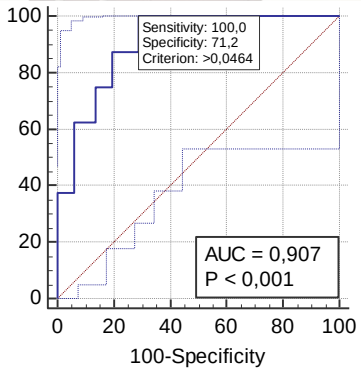


Figure 3. ABN according to arterial thromboses (AT, a) and antinuclear antibodies (ANA, b).



a) OR 1.5 [95% CI 1.0; 2.2], p=0.029 b) OR 21.4 [95%CI 1.2; 377.4], p=0.036

Figure 4. ROC-curve



According to found logistic regression model, ABN risk in APS patients can be prognosticated by the next formula:

$Z = -7.4 + 3.1 \times ANA\ (yes–1/no–0) + 0.1 \times DD\ (number\ of\ years) + 0.4 \times AT\ (yes–1/no–0)$.

Classified function value Z=0.05 defines the patients group with ABN. Thus the value Z>0.05 indicates ABN development in patient, herewith sensibility is of 100% and specificity is 71.2%, positive prognostic value is 90.7% .

Conclusion. Positive antinuclear antibodies, disease duration and arterial thrombosis influenced the development of avascular bone necrosis in patients with antiphospholipid syndrome.