Parallel Session 10: APS

29 ANTIPHOSPHOLIPID SCORE IS A NOVEL RISK FACTOR FOR IDIOPATHIC OSTEONECROSIS

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Background and Aims Our group introduced a quantitative marker of antiphospholipid antibodies (aPL) "antiphospholipid score (aPL-S)", which well reflected the risk of developing thrombosis (Otomo K, *et al*. Arthritis Rheum 2012). Idiopathic osteonecrosis (ION) has been shown to occur as a result of ischemia, however, the involvement of aPL in its pathophysiology remains to be elucidated. In this study, we aimed to identify the impact of aPL on the development of ION using aPL-S.

Methods A single centre retrospective study comprising 75 consecutive patients with systemic lupus erythematosus who underwent magnetic resonance imaging of hip joints from January 2000 to March 2016. aPL-S, as well as classical risk factors for ION, were evaluated in all the enrolled patients.

Results ION of the femoral head was observed in 33 out of 75 patients(44%). High aPL-S ($p=0.009$), aPL positivity ($p=0.009$), male ($p=0.007$), malar rash ($p=0.010$)and high dose (>0.8 mg/kg/day) glucocorticoids($p<0.001$) were identified as risk factors for ION at univariate analysis. Multivariate analysis confirmed high aPL-S, male, malar rash and high dose glucocorticoids as independent variables. Six out of 8 patients (75%) with very high aPL-S (>30), developed ION. Conversely, systemic lupus erythematosus disease activity index and pulse methylprednisolone therapy were not identified as risk factors for ION.

Conclusions We newly identified aPL-S as a risk factor for ION. ION should be considered as one of the antiphosholipid antibody-associated-disease.

Parallel Session 11: Effector T cells in SLE

30 METABOLIC REPROGRAMMING IN CD4+CD28-CXCR3INTT-BETHI CELLS AND ITS RELEVANCE TO PATHOGENESIS IN PATIENTS WITH SLE

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Background and Aims $CD4^+$ T cells play a crucial role in pathological process of Systemic Lupus Erythematosus (SLE). Recently, we found that T-bet is an important factor for shift to glycolysis in activated $CD4^+$ T cells *in vitro*. In this study, we examined the mechanism by which T-bet in $CD4^+$ T cells involved in pathogenesis of SLE.

Methods Peripheral blood mononuclear cells were obtained from 19 healthy controls (HCs), 30 patients with bio-naïve active RA and 60 patients with SLE. The expression of CXCR3, T-bet, mTORC1 phosphorylation and IFN-γ production in $CD4^+$ T cells were measured by flow cytometry, and assessed the association with clinical characteristics.

Results We found that the ratio of $CD28^-CXCR3^{int}T\text{-}bet^{hi}$ cells in patients with SLE was significantly higher compared to HCs. $CD4^+CD28^-CXCR3^{int}T\text{-}bet^{hi}$ cells mainly consisted of $CD45RA^-CCR7^-$ effector memory cells and were significantly activated with pronounced IFN-γ production. Interestingly, the ratio of $CD4^+CD28^-CXCR3^{int}T\text{-}bet^{hi}$ cells was significantly correlated with the number of immunosuppressants previously used for the SLE patients, that is treatment-resistant. Phosphorylation of mTORC1, which is important for shift to glycolysis, in $CD4^+$ T cells from patients with SLE was significantly increased compared to HCs. T-bet expression was significantly correlated with mTOC1 phosphorylation and IFN-γ production in $CD4^+$ T cells from patients with SLE.

Conclusions These results indicated that $CD4^+CD28^-CXCR3^{int}T\text{-}bet^{hi}$ cells might be related to refractory to established therapies in patients with SLE. In addition, these cells are constitutively activated accompanied with shift to glycolysis through IFN-γ-mTORC1-T-bet pathway, which is a potential target for patients with SLE.

Parallel Session 15: Pearls in autoimmunity

31 HARNESSING AUTOIMMUNITY (DISEASE-SPECIFIC AUTOANTIBODY AND ITS VARIANT) IN THERANOSTICS OF DISEASE

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The prevalence of autoimmune disorder or disease is characterised by its targeting autoantibodies. The term "theranostic", an innovative concept of medical modality featuring a portmanteau of therapeutic and diagnostic systems, was coined in 2002 and has since undergone progressive development into current preclinical stages. Recently, we have prepared humanised and shortened variants of IgG (single chain variable fragment; 25 kDa-scFv) targeting towards: (i) β2-glycoprotein I (β2-GPI) complexed with oxidised LDL, a key population of pathogenic autoantibodies related to the development of antiphospholipid syndrome (APS) and autoimmune mediated atherosclerosis, and (ii) mesothelin, a 40 kDa-tumour differentiation antigen, to establish a clinically applicable theranostic in autoimmune mediated atherosclerosis and oncology. Goals of our theranostic system (comprises of novel and biodegradable ^{89}Zr-radiolabeled nanoparticles conjugated with specific scFv) are to successfully deliver therapeutically effective small interfering RNA (siRNA), for inducing apoptosis in targeted cells of experimental models and to offer simultaneous visualisation of the targets via PET imaging system. The combination of photodynamic therapy (PDT) with 5-aminolevulinic acid (ALA) and photo-controlled intracellular siRNA

delivery system further offers a promising theranostic-based system in oncology, ideally via its targeted apoptosis-inducing feature. Alternatively, we have also proposed the combination of our novel theranostic system with alternative therapeutic candidates such domain I and proteolytic resistant domain V of β2-GPI, in combination with both PET imaging and metabonomics, as another feasible theranostic approach for management of angiogenesis-mediated cardiovascular disease (CVD) and cancer developments.

Parallel Session 16: Quality of care and patient reported outcomes

32 DISEASE OUTCOMES AND CARE FRAGMENTATION IN SYSTEMIC LUPUS ERYTHEMATOSUS (SLE)

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Background and Aims To examine the impact of care fragmentation across multiple healthcare institutions on disease outcomes in patients with systemic lupus erythematosus (SLE).

Methods Methods: Using the Chicago HealthLNK Data Repository (HDR), an assembly of electronic health records from six institutions, we identified patients with SLE, using ICD-9 codes, whose care was delivered at more than one organisation. We examined whether patients had severe infections or comorbidities (ICD-9 code defined) that indicate SLE-induced damage. T-tests and chi-squared tests were used to examine differences between fragmentation groups. Logistic regression was used to assess factors contributing to the occurrence of disease outcomes.

Results We identified 4276 patients with SLE. 856 (20%) received care from more than one healthcare institution. African American patients and patients with public insurance were more likely to experience care fragmentation compared to white and private insurance patients (OR 1.66; 95% CI 1.44, 1.97 and OR 1.63; 95% CI 1.42, 1.95). We identified increased risk of infections (OR 1.57; 95% CI 1.30, 1.88), cardiovascular disease (OR 1.51; 95% CI 1.23, 1.86), end stage renal disease (OR 1.34; 95% CI 1.05, 1.70), nephritis (OR 1.28; 95% CI 1.07, 1.54) and stroke (OR 1.28; 95% CI 1.01, 1.62) among patients with fragmented care, adjusted for age, sex, race, insurance status, length of follow-up time, and total visit count. **Conclusion** In this cross-site cohort of SLE patients, care fragmentation is associated with increased risk of severe infection and comorbidities. These results suggest that improved health information exchange could positively impact outcomes for SLE patients.