period (FUP, <12 months), while the corresponding response rates at long-term FUP (≥ 12 months) were 45%, 51%-63%, 58%-100% and 60%-100%. For ADA and ADA or ETN or INF (patients were on either therapy), while the JIA-ACR response rates at short term FUP were not reported, the response rates at long-term FUP were 100% and 78% respectively. Additionally, juvenile arthritis disease activity score (JADAS)-10 ≤ 1 scores were reported for ANA or CAN, CAN, ETN and TCZ as 52%, 48%-91%, 20% and 36% at short-term FUP. The mean changes in JADAS-71 scores at short-term FUP for ANA and TCZ were 10% and 11% respectively while the corresponding scores at long-term FUP were 13% and 14% ($p < 0.001$).

All interventions were generally well tolerated by SJIA patients; infections, injection site reactions and macrophage activation syndrome were reported for all biologics. Other complications included gastrointestinal disorders, pharyngitis, skin disorders, increase in liver enzymes etc.

Conclusion: The current interventions especially ANA, CAN, ETN and TCZ were found to be effective and generally well tolerated in SJIA. However, the lack of head-to-head studies limits a rigorous comparison.

REFERENCES:

- [1] Ringold, et al. 2013. Arthritis Rheum;65:2499-512.
- [2] Higgins, et al. 2011. Cochrane Handbook for Systematic Reviews of Interventions Version 5.1.0.

Disclosure of Interests: Jasmin Kuemmerle-Deschner Grant/research support from: Jasmin Kuemmerle-Deschner is an employee of University of Tuebingen, Germany, and received consultants/speakers fees from Novartis and SOBI pharmaceuticals and grant support from SOBI and Novartis., Consultant for: Jasmin Kuemmerle-Deschner is an employee of University of Tuebingen, Germany, and received consultants/speakers fees from Novartis and SOBI pharmaceuticals and grant support from SOBI and Novartis., Speakers bureau: Jasmin Kuemmerle-Deschner is an employee of University of Tuebingen, Germany, and received consultants/speakers fees from Novartis and SOBI pharmaceuticals and grant support from SOBI and Novartis., Lalit Thakur Employee of: Lalit Thakur is an employee of Novartis Healthcare Pvt. Ltd., Hyderabad, India, Aneesh George Employee of: Aneesh George is an employee of Novartis Healthcare Pvt Ltd., Peter Hur Employee of: Peter Hur is an employee of Novartis Pharmaceuticals Corporation, East Hanover, New Jersey, USA

DOI: 10.1136/annrheumdis-2019-eular.5668

FRI0599

AA AMYLOIDOSIS IN RECIPIENTS OF CADAVERIC DERIVED PITUITARY GROWTH HORMONE – POTENTIAL EFFECT OF AN AMYLOID ENHANCING FACTOR?

Helen J. Lachmann¹, Dorota Rowczenio, Janet A. Gilbertson, Islam Noor, Hadija Trojer, Julian D. Gillmore, Ashutosh D. Wechalekar, Philip N. Hawkins. *UCL Division of Medicine and Royal Free Hospital London NHS Foundation Trust, National Amyloidosis Centre, London, United Kingdom*

Background: The development of Creutzfeldt-Jakob disease (CJD) in individuals treated with human cadaveric pituitary-derived growth hormone (c-hGH) was reported in 1985 resulting in its immediate withdrawal(1). Amyloid- β protein (A β) deposits have been found at autopsy in individuals previously exposed to c-hGH and misfolded A β peptide was recently identified in archived vials of human c-hGH; this induced A β pathology in an experimental model(2). The suggestion that contaminants in c-hGH could seed protein misfolding is reminiscent of the concept of amyloid enhancing factor (AEF), in which administration of tiny amounts of amyloidogenic material is associated with acceleration of experimentally induced murine AA amyloidosis(3). In humans AA amyloid is a rare complication of chronic inflammation in which the amyloid fibrils are derived from Serum Amyloid A protein (SAA), a circulating component of the acute phase response.

Objectives: To seek evidence of prior exposure to c-hGH in patients with AA amyloidosis.

Methods: A database of 782 patients with AA amyloidosis seen between 1990 & 2017 was searched using: pituitary, craniopharyngioma & growth hormone. Only patients exposed to GH prior to 1985 were included.

Results: 10 cases were identified; accounting for 8% of AA of unknown etiology. 8 were female, 9 north European, median age at diagnosis of amyloid 47.9 yr with a median time since starting c-hGH of 35 yr. The indications were: 4 craniopharyngioma, resection of ependymoma, nasal pharyngeal tumour & encephalocele, 2 unexplained hypopituitarism. Chronic inflammation was assessed by serial blood tests after the diagnosis of amyloid; 1 had median SAA 131 mg/L; 4 had medians 20- 54

mg/L & the others low level inflammation, median < 20mg/L. No cause of inflammation was identified although 50% were obese. Genetic testing excluded systemic autoinflammatory disorders. 6 European patients were homozygous for SAA1.1 (66.7% compared to control frequency 29%)(4). 4 patients eventually required dialysis, 2 had renal transplants; median survival from diagnosis of amyloid was 132 mn & 3 patients have died.

Conclusion: 2,000 UK children were exposed to c-hGH; the finding of AA amyloid of uncertain etiology in these 10 cases raises the possibility that contaminants in c-hGH potentially contribute to misfolding of SAA. 80% had at least one recognised additional modest risk factor for the development of AA amyloidosis in the form of SAA1.1 homozygosity or obesity suggesting that a combination of factors may contribute to amyloidogenesis in individuals who have low levels of circulating potentially amyloidogenic protein(4).

REFERENCES:

- [1] Underwood LE, Fisher DA, Frasier DS, et al. Degenerative neurologic disease in patients formerly treated with human growth hormone: Report of the Committee on Growth Hormone Use of the Lawson Wilkins Pediatric Endocrine Society, May 1985. *The Journal of Pediatrics*. 1985;107(1):10-2.
- [2] Purro SA, Farrow MA, Lineham J, et al. Transmission of amyloid- β protein pathology from cadaveric pituitary growth hormone. *Nature*. 2018;564:415-9.
- [3] Lundmark K, Westermark GT, Nyström S, et al. Transmissibility of systemic amyloidosis by a prion-like mechanism. *Proc Natl Acad Sci U S A*. 2002;99(10):6979-84.
- [4] Blank N, Hegenbart U, Dietrich S, et al. Obesity is a significant susceptibility factor for idiopathic AA amyloidosis. *Amyloid*. 2018;25(1):37-45.

Disclosure of Interests: Helen J. Lachmann Grant/research support from: SOBI, Novartis, Consultant for: Novartis, Takeda, Speakers bureau: SOBI, Novartis, Dorota Rowczenio: None declared, Janet A. Gilbertson: None declared, Islam Noor: None declared, Hadija Trojer: None declared, Julian D. Gillmore: None declared, Ashutosh D. Wechalekar: None declared, Philip N. Hawkins: None declared

DOI: 10.1136/annrheumdis-2019-eular.2653

FRI0600

FIRST SINGLE-CENTERED COHORT OF CHINESE PATIENTS WITH PEDIATRIC SAPHO

Yuming Shao¹, Chen Li², Shuang Liu³, Wen Zhang⁴. ¹Peking Union Medical College, Beijing, China; ²Peking Union Medical College Hospital, Traditional Chinese Medicine, Beijing, China; ³Peking Union Medical College, Beijing, China; ⁴Peking Union Medical College Hospital, Rheumatology, Beijing, China

Background: The SAPHO syndrome (Synovitis, Acne, Pustulosis, Hyperostosis and Osteitis) is an disease entity with chronic inflammatory osteo-articular symptoms and typical dermatological lesions. Pediatric SAPHO is regarded as equivalent of Chronic Recurrent Multifocal Osteomyelitis (CRMO) or Chronic Non-bacterial Osteomyelitis (CNO). There have already been several pediatric SAPHO cohorts about Caucasian populations. No Chinese cohorts have been reported.

Objectives: The aim of this study was to evaluate clinical features and treatment for all pediatric SAPHO patients admitted to Peking Union Medical College Hospital (PUMCH, Beijing, China)

Methods: We conducted a single-centered non-intervention retrospective study of 24 pediatric SAPHO patients who were diagnosed with Khan's modified criteria in PUMCH from April 2014 to August 2018 [1]. The demographic (sex, age, onset age, follow-up years), clinical (bone and skin symptoms), laboratory (ESR, CRP, HLA-B27, ANA, IL-6, IL-8, TNF- α), imaging (CT, MRI, bone scintigraphy), histologic (lymphocytic, granulocytic) and treatment (medications and effect) data were collected.

Results: Detailed information of 15 male and 9 female was available. The mean $\pm$ SD age at onset of bone and skin symptoms was 11.7 $\pm$ 3.8 and 14.4 $\pm$ 2.7 years, respectively. The duration of follow-up was 19.2 $\pm$ 15.2 months. 17 (71%) patients had skin manifestations (46% Severe Acne, all male; 21% Palmoplantar Pustulosis, all female; 4% psoriasis). Involvement of bone lesions varied (42% anterior chest wall, 29% mandible, 50% peripheral bones, 21% spinal bones). ESR, CRP, IL-6, IL-8, IL-10 was elevated in 88%, 96%, 50%, 71%, 70% patients, respectively. 11 did bone biopsy (6 dominantly lymphocytic, 3 granulocytic, 2 both). CT, MRI and bone scintigraphy were performed in 79%, 96%, 96% patients, respectively. A total of 6 patients have been treated with NSAIDs, 10 with bisphosphonate, 10 with TNF- α antagonist, 1 with Glucocorticoids, with a variable response. 70% patients showed complete remission after bisphosphonate or TNF- α antagonist therapy.

Table 1. Clinical characteristics of 24 pediatric SAPHO patients

Skin manifestation	17/24 (71%)
Severe acne (M/F)	11/0
PPP (M/F)	0/5
None (M/F)	3/4
Psoriasis (M/F)	0/1
Nonspecific rash (M/F)	1/0
Bone manifestation	24/24(100%)
Pain	24 (100%)
Swelling	17 (71%)
Restricted function	19 (79%)

Table 2. Effect of different treating choices for 24 pediatric SAPHO patients

Medications	Remission	Partial response	No response	Total
NSAIDs	3	3	0	6/24
Bisphosphonates	7	2	1	10/24
TNF- α antagonist	7	3	0	10/24
Glucocorticoids	0	1	0	1/24

Conclusion: This is the first Chinese cohort of pediatric SAPHO patients. Their bone lesions could be divided into 4 types, anterior chest wall, mandible, peripheral bones and spinal bones. We also provide evidence that bisphosphonate and TNF- α antagonist are useful for pediatric SAPHO treatment.

REFERENCES:

- [1] Hayem G. SAPHO syndrome. *Rev Prat.* 2004;54(15):1635–6.

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2019-eular.1061

FRI0601

SERUM IMMUNOGLOBULIN G4 LEVEL IN INHEPATITIS B WAS HIGHER THAN AUTOIMMUNE LIVER DISEASE IN A CHINESE POPULATION

Zetao Liao, Yanli Zhang. *Third Affiliated Hospital of Sun Yat-sen University, Guangzhou, China*

Background: High serum level of Immunoglobulin G4 (IgG4) was detected in autoimmune hepatitis (AIH), but little was known in other types of hepatitis such as hepatitis B, primary biliary cholangitis (PBC) and primary sclerosing cholangitis (PSC).

Objectives: The aim of this study is to evaluate the level of serum IgG4 in hepatitis B and autoimmune liver disease.

Methods: Hepatitis B and autoimmune liver disease patients were enrolled between January 1st and August 30th 2018. Diagnosis of Hepatitis B, AIH, PBC and PSC was basing on corresponding classification criteria, and established IgG4 related diseases were excluded. The levels of serum IgG4 were determined by nephelometric assay. The cut-off value of serum IgG4 was 2.01 g/L. Serum IgG4 among different liver diseases were compared.

Results: 161 HBV hepatitis and 112 autoimmune liver diseases (52 AIH, 57 PBC, 3 PSC) were enrolled in this study. The HBV hepatitis patients were younger than patients with autoimmune liver disease (44.79 $\pm$ 12.56 vs 52.52 $\pm$ 11.16 years old). In total, 61 patients (22.34%) had elevated serum IgG4 level. IgG4 level in HBV hepatitis was significantly higher than in AIH, PBC, respectively (1.64 $\pm$ 1.80 vs 1.11 $\pm$ 1.16, 1.64 $\pm$ 1.80 vs 0.96 $\pm$ 0.87 g/L, P <0.05).

Conclusion: High serum IgG4 was very common in liver diseases without IgG4 related diseases especially in HBV hepatitis. Differential diagnosis should be made in patients with hepatitis accompanied with high serum IgG4.

REFERENCES:

- [1] No.

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2019-eular.8240

FRI0602

SERUM ALBUMIN PREDICTS ONCOLOGICAL OUTCOMES BUT NOT RHEUMATIC IMMUNE-RELATED ADVERSE EVENTS FOLLOWING PD-1 INHIBITOR THERAPY

Christopher McMaster^{1,2}, David Liew^{1,2,3}, Bonnia Liu^{1,2}, Jessica Leung¹, Albert Frauman^{2,3}, Jonathan Cebon^{4,5}, Russell Buchanan^{1,3}, ¹Austin Health, Rheumatology, Melbourne, Australia; ²Austin Health, Clinical Pharmacology and Therapeutics, Melbourne, Australia; ³University of Melbourne, Medicine, Melbourne, Australia; ⁴Olivia Newton-John Cancer Wellness and Research Centre, Melbourne, Australia; ⁵La Trobe University, Cancer Medicine, Melbourne, Australia

Background: Rheumatic immune-related adverse events (irAEs) following immune checkpoint inhibitor (ICI) therapy for cancer are an increasing burden on rheumatological services but have also been associated with subsequent good oncological outcomes(1). A clinical need for biomarkers to predict rheumatic irAEs exists. High serum albumin and low lactate dehydrogenase (LDH)(2) prior to ICI therapy has been associated with subsequent good oncological outcomes, and may therefore predict rheumatic irAEs, but to the best of our knowledge this has not previously been examined.

Objectives: To determine the relationship between serum albumin and LDH of immune-related adverse events (irAEs) and oncological outcomes following treatment with the main classes of ICI therapy for cancer, programmed cell death protein 1 (PD-1) inhibitors and programmed death-ligand 1 (PD-L1) inhibitors.

Methods: We retrospectively examined all patients at a single centre who had a serum albumin performed in the institutional laboratory before treatment with a PD-1 or PD-L1 inhibitor before January 1, 2018, with follow-up until October 1, 2018. Patients with any diagnosis of a rheumatic irAE were identified. Treatment response was determined based on assessment by the treating oncologist, with favourable oncological response defined as complete or partial response. Statistical tests were performed using two-tail t-tests. Missing laboratory values were imputed using median imputation.

Results: There were 401 episodes of therapy which met criteria, of which 324 had a serum albumin level and 244 had serum LDH prior to the commencement of therapy. A rheumatic irAE was diagnosed in 26 of the 401 patients (6.5%) and a good oncological response was noted in 140 patients (34.9%). There was a statistically significant relationship between higher baseline serum albumin and favourable oncological response (p < 0.001), but not with the development of a rheumatic irAE (p =0.41)(Table 1). Although serum LDH levels were lower in those with favourable oncological response, this relationship was not statistically significant (p =0.16). Similarly, LDH levels were lower on average in those who subsequently developed a rheumatic irAE, however this relationship was not statistically significant (p =0.57).

Conclusion: High serum albumin was associated with good oncological outcomes following ICI therapy with a PD-1 or PD-L1, but not with rheumatic irAEs. The reason for this dissonance is not clear. Not all markers of good oncological response predict rheumatic irAEs and further study should focus on consequent implications for rheumatic irAE pathophysiology.

REFERENCES:

- [1] Kostine M, Rouxel L, Barnette T, Veillon R, Martin F, Dutriaux C, et al. Rheumatic disorders associated with immune checkpoint inhibitors in patients with cancer-clinical aspects and relationship with tumour response: a single-centre prospective cohort study. *Ann Rheum Dis.* 2017.
- [2] Bigot F, Castanon E, Baldini C, Hollebecque A, Carmona A, Postel-Vinay S, et al. Prospective validation of a prognostic score for patients in immunotherapy phase I trials: The Gustave Roussy Immune Score (GRIm-Score). *European Journal of Cancer.* 2017;84:212-8.