

patients with cSLE. 2) Identify both baseline and disease course (time-varying) predictors of damage trajectory.

**Methods** Single centre, retrospective, inception cohort. We included 473 patients who were diagnosed and followed, from 1st January 1985 to 30<sup>th</sup> September 2011. Patients had to be <18 years at diagnosis, have satisfied the ACR classification criteria for SLE, were treated for <3 months with steroids or an immunosuppressant for any other disease, and have had at least 3 visits. Longitudinal childhood data was obtained from our database while adulthood data was obtained from either a research database or patients' charts. Clinical information at every visit was collected: for SLE disease activity index 2000 (SLEDAI2K), the SDI, laboratory results, and medications. Predictors were identified using a weighted generalised estimating equation (WGEE). Time-varying predictors: disease activity, individual items of SLEDAI2K, corticosteroid, immunosuppressant and anti-malarial exposures, were lagged by 6, 12, 18 and 24 months prior to each visit.

**Results** 67/473 (14%) patients were lost to follow-up. There were 14097 visits, 3290 patient-years. The median follow-up duration was 5.5 years, median age at diagnosis was 14.1 years and median age at last visit was 19.5 years (range 6.0–41.9 years). 67% of patients were >18 years old at last follow-up. The predicted average population damage was 0.7 at 5 years, 1.3 at 10 years, 1.9 at 15 years, 2.3 at 20 years and 2.7 at 25 years. Cataract (14%), avascular necrosis (10%) and osteoporosis (5%) were the commonest damage items. Only 2 had myocardial infarctions. Life-threatening major organ manifestations predicted higher initial damage but the accrual slowed down over time. Higher prednisone dose (12, 24 months before) and the use of cyclophosphamide (6, 12, 18, 24 months before) predicted an increased damage trajectory at current visit. Antimalarial exposure (6 months before), mucosal ulcers (6, 12, 18, 24 months before) and pericarditis (6 months before) were protective against an increase in damage trajectory.

**Conclusion** Patients with cSLE accrue damage steadily throughout their disease course into adulthood. Baseline factors that predicted higher initial damage and influenced damage trajectory. SLE clinical features and therapeutic exposures during the course of disease, predicted a change in damage trajectory.

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#### FROM CHILDHOOD TO ADULTHOOD: IDENTIFYING LATENT CLASSES OF DISEASE ACTIVITY TRAJECTORIES IN CHILDHOOD-ONSET SYSTEMIC LUPUS ERYTHEMATOSUS PATIENTS

<sup>1,2</sup>Lily SH Lim\*, <sup>2,3</sup>Eleanor Pullenayegum, <sup>4</sup>Lillian Lim, <sup>2,3,4</sup>Brian M Feldman, <sup>5</sup>Dafna D Gladman, <sup>4</sup>Earl D Silverman. <sup>1</sup>Children's Hospital Research Institute of Manitoba, University of Manitoba, Winnipeg, Canada; <sup>2</sup>Institute of Health Policy Management and Evaluation, University of Toronto, Toronto, Canada; <sup>3</sup>Child Health Evaluative Sciences, SickKids Research Institute, Toronto, Canada; <sup>4</sup>SickKids, Toronto, Canada; <sup>5</sup>Centre for Prognosis Studies, Toronto Western Hospital Research Institute, Toronto, Canada

10.1136/lupus-2016-000179.105

**Background** Although SLE patients are thought to follow different patterns of disease courses, no information is available about the longitudinal disease activity or the number of possible different disease courses. This study sought to: 1) Assess for distinguishable differences in disease activity trajectories in childhood-onset SLE (cSLE) patients; 2) Identify factors predictive of membership in different classes and 3) Assess if different disease activity trajectories are associated with different damage trajectories.

**Methods** Single-centre longitudinal inception cohort of cSLE patients (onset < 18 years) diagnosed and followed from Jan 1985 to Sep 2011. Paediatric data was obtained from our institutional cSLE database and adult data from the Toronto Lupus database or from rheumatologists' offices. Longitudinal disease trajectory was constructed using data from every clinic visit in the 1<sup>st</sup> 10 years after diagnosis. Longitudinal SLE activity is a latent construct that is imperfectly measured with SLE disease activity index 2000 (SLEDAI2K) and prednisone exposure. SLE-DAI2K and prednisone use were then jointly modelled in a Bayesian growth mixture model (GMM). Baseline factors were tested for prediction of class membership.

**Results** 473 patients were included. 82% were female, median age of diagnosis was 14.1 years. There were 11992 visits, 2666 patient years. 67% of the population had transferred to adult care. Mean population SLEDAI2K and prednisone trajectories of cSLE patients showed rapid decline to low activity levels within 2 years after diagnosis. Joint GMM showed 5 latent classes in this cohort of cSLE patients. Class 1 patients (6%) have chronic moderate-high disease activity, class 2 (12%) had moderate initial disease activity and continued moderate long-term prednisone use, class 3 (17%) had initial high disease activity but achieved long-term remission, class 4 (19%) had high initial disease activity but relapsed later, class 5 (45%) had chronic low-grade disease activity. Across all classes, there was chronic use of prednisone (at least 5–10 mg/day) among cSLE patients in the first 10 years after diagnosis. Baseline major organ involvement, ethnicity, age at diagnosis and the number of baseline ACR criteria predicted probability of membership in different classes. Class 1 was associated with the most average damage accrual while class 5 was not associated with significant average damage accrual even after 10 years.

**Conclusions** cSLE patients could be sub-classified into 5 distinct classes of disease activity trajectories. Baseline and demographic factors predicted membership in the distinct disease classes. Different disease classes were associated with different patterns of damage trajectories.

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#### EARLY PREECLAMPSIA IN SLE PREGNANCY

<sup>1,2</sup>Julia F Simard\*, <sup>2</sup>Elizabeth V Arkema, <sup>1</sup>Cathina Nguyen, <sup>3</sup>Elisabet Svenungsson, <sup>2,4</sup>Anna-Karin Wikstrom, <sup>5</sup>Kristin Palmsten, <sup>6</sup>Jane E Salmon. <sup>1</sup>Health Research and Policy Stanford School of Medicine, United States; <sup>2</sup>Clinical Epidemiology Unit, Karolinska Institute, Sweden; <sup>3</sup>Rheumatology, Karolinska Hospital, Sweden; <sup>4</sup>Danderyd Hospital, Sweden; <sup>5</sup>Pediatrics, University of California at San Diego, United States; <sup>6</sup>Hospital for Special Surgery, Weill Cornell Medical College, United States

10.1136/lupus-2016-000179.106

**Background** Early preeclampsia is a serious pregnancy complication characterised by abnormal placentation, diffuse maternal endothelial cell dysfunction, and requiring emergent delivery which may be very premature. SLE has been associated with preeclampsia, but little is known about the risks of early onset preeclampsia – a pregnancy morbidity associated with stroke, placental abruptions, and perinatal death.

**Materials and methods** SLE was defined as  $\geq 2$  visits in the Swedish National Patient Register (NPR, inpatient and outpatient specialist) with  $\geq 1$  SLE diagnosis from a specialist who typically treats, manages, or diagnoses SLE in Sweden (2001–2012). General population comparators (non-SLE) were sampled from the Total Population Register. We restricted to singleton births in the Medical Birth Register (MBR). Preeclampsia was defined by first ICD-coded visit during pregnancy in NPR and early-onset