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Economic Evaluation of Lupus Nephritis in an International Inception Cohort: Comparing the Hospitalization, Medication, Dialysis, and Procedure Costs of Those with and without Nephritis

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SESSION INFORMATION

Date: Sunday, November 8, 2015

Session Title: Systemic Lupus Erythematosus - Clinical Aspects and Treatment I: Epidemiology and Prognosis

Session Type: ACR Concurrent Abstract Session

Session Time: 2:30PM-4:00PM

Background/Purpose:

Little is known about the long-term costs of lupus nephritis (LN). The annual and long-term healthcare costs were compared between SLE patients with and without LN.

Methods:

Patients from 32 centres in 11 countries were enrolled in the Systemic Lupus International Collaborating Clinics (SLICC) inception cohort within 15 months of diagnosis and provided annual data on renal function, hospitalizations, dialysis, and utilization of medications and selected procedures. LN was diagnosed by renal biopsy or fulfillment of the American College of Rheumatology (ACR) SLE classification criteria renal item. Renal function was also assessed annually based on estimated glomerular filtration rate (eGFR) or proteinuria (ePrU). Annual health resource utilization was costed using 2012 Canadian prices. Annual costs associated with renal function states were obtained from multiple regressions adjusting for age, race/ethnicity, disease duration, SLICC centre location, SLEDAI-2K and SLICC/ACR Damage Index (excluding renal components), and the SF-36. 5-year cumulative costs were estimated by determining annual costs associated with each renal function state and then forecasting the expected duration in each state. Durations were estimated using a relative risk regression model.

Results:

1645 patients participated, 89.2% females, 48.8% Caucasian, mean age at diagnosis 34.8 years (SD 13.4), mean disease duration at enrollment 0.5 years (SD 0.3), and mean follow up 6.1 years (SD 3.3). LN was diagnosed in 39.4% over follow up. Health resource utilization and annual costs (after adjustment using regression) were markedly higher in those with an eGFR < 30 ml/min or with LN (Table 1).

Table 1. Predicted Annual Health Costs Stratified by State of Renal Function

eGFR		ePrU		Lupus Nephritis	
State	Costs, Mean 95% CI 2012 CDN$	State	Costs, Mean 95% CI 2012 CDN$	State	Costs, Mean 95% CI 2012 CDN$
eGFR >60 ml/min	2234 (1503, 2965)	ePrU< 0.25g/d	2247 (1406, 3088)	No Lupus Nephritis	1588 (726,2450)
eGFR 30-60ml/min	3014 (1636, 4392)	ePrU 0.25-3.0g/d	3424 (2287, 4561)	Lupus Nephritis	3876 (2949,4803)
eGFR < 30 ml/min	12551 (10301, 14801)	ePrU > 3.0 g/d	4703 (2128, 7278)		

5-year cumulative costs stratified by baseline renal function state were calculated by multiplying the annual costs associated with each state by the expected duration in that state (eGFR example in Table 2).

Table 2. Expected Duration in Each Renal State over 5 Years

		Expected Duration in each State over 5 years		
Baseline State	Annual Costs 2012 CDN$	eGFR >60 ml/ min	eGFR 30-60 ml/min	eGFR < 30 ml/min
eGFR >60 ml/ min	2234	4.74 yrs	0.22 yrs	0.04 yrs

eGFR 30-60 ml/min	3014	2.60 yrs	1.88 yrs	0.52 yrs
eGFR < 30 ml/min	12551	1.03 yrs	1.09 yrs	2.88 yrs

Five year cumulative costs were greater in those with severely impaired eGFR or with LN at baseline (Table 3).

Table 3. Predicted 5-Year Cumulative Health Costs Stratified by Baseline State of Renal Function

eGFR		ePrU		Lupus Nephritis	
Baseline State	Costs, Mean 95% CI 2012 CDN$	Baseline State	Costs, Mean 95% CI 2012 CDN$	Baseline State	Costs, Mean 95% CI 2012 CDN$
eGFR >60 ml/ min	11763 (7904, 15622)	ePrU< 0.25 g/d	12070 (7594, 16547)	No Lupus Nephritis	8663 (4331, 12995)
eGFR 30-60 ml/min	18008 (12348, 23667)	ePrU 0.25-3.0 g/d	13834 (8758, 18909)	Lupus Nephritis	19380 (14745, 24015)
eGFR < 30 ml/min	41732 (32998, 50467)	ePrU > 3.0 g/d	15627 (9192, 22061)		

Conclusion:

Patients with an eGFR <30ml/min and LN incur higher annual and 5-year cumulative costs. By estimating the expected duration in each renal function state and incorporating associated annual costs, disease severity at presentation can be used to anticipate future healthcare costs, critical knowledge for cost effectiveness evaluations of novel LN therapies.

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