Clinical Rheumatology (2018) 37:1413–1416
https://doi.org/10.1007/s10067-018-4066-6

BRIEF REPORT

Impact of early systemic lupus erythematosus on work disability—results from the Finnish nationwide register 2000–2007

Pia Elfving[1] · Kari Puolakka[2] · Vappu Rantalaiho[3,4] · Hannu Kautiainen[5,6,7] · Lauri J. Virta[8] · Oili Kaipiainen-Seppänen[1]

Received: 14 November 2017 / Revised: 4 February 2018 / Accepted: 6 March 2018 / Published online: 14 March 2018

Abstract

Objectives of this study were to examine work disability (WD) and its leading causes in incident SLE patients. Data were derived from the Finnish nationwide registries to identify all non-retired, 18 to 64-year-old incident SLE patients between 2000 and 2007. Sick benefits and WD pensions and the causes for them were monitored until the end of 2008. A total of 446 working-aged, incident SLE patients available for work force (mean age 42 ± 13 years, 89% females) were found. During the follow-up (median 5.3 years), WD pension was granted to 27 patients. The most common cause was SLE itself (14 patients, 52%), with cumulative incidence of 3.4% (95% CI 1.9 to 5.8) in 5 years and 5.0% (95% CI 3.0 to 8.5) in 8 years, followed by musculoskeletal and psychiatric causes. The age- and sex- adjusted incidence ratio for WD pension in SLE patients due to any cause was 5.4 (95% CI 3.7 to 7.9) compared to the Finnish population. The mean number of WD days was 32 (95% CI 28 to 35) per patient-year among all SLE patients during the follow-up. The study concludes that SLE patients have an increased risk for WD already in early course of the disease.

Keywords Insurance benefits · Pensions · Registries · Systemic lupus erythematosus · Work disability

Introduction

Systemic lupus erythematosus (SLE) often affects working-aged adults and has an unpredictable nature with multiple organ manifestations [1]. This may influence on functional capacity and result diminished work productivity, which in turn translates in indirect costs. The German cost of illness study on four rheumatic diseases (SLE, rheumatoid arthritis, ankylosing spondylitis, and psoriatic arthritis) showed the highest indirect costs in SLE especially due to sick leaves and permanent work disability (WD) [2]. Available data on WD in SLE is limited. Studies are heterogeneous in terms of patient cohorts, definition of WD, social insurance, and labor market [2–16].

The aim of the study was to explore the occurrence and causes of disability pensions and the number of WD days in incident SLE patients in Finland.

Methods

Finland has a mainly Caucasian (> 98%) population. In the year 2008, the working-aged population was 3.4 million people [17]. The permanent residents are covered by the National Health Insurance, which provides reimbursement for expenses caused by illnesses. The Social Insurance Institution (SII) grants a higher special reimbursement for expenses of drugs

✉ Pia Elfving
pia.elfving@kuh.fi

1 Department of Medicine, Kuopio University Hospital, P.O. Box 100, 70029 KYS Kuopio, Finland

2 Department of Medicine, South Karelia Central Hospital, Valto Käkelän katu 1, 53130 Lappeenranta, Finland

3 Department of Internal Medicine, Centre for Rheumatic Diseases, Tampere University Hospital, Teiskontie 35, 33521 Tampere, Finland

4 School of Medicine, University of Tampere, Kalevantie 4, 33100 Tampere, Finland

5 Unit of Primary Health Care, Helsinki University Central Hospital, P.O. Box 100, 00029 HUS Helsinki, Finland

6 Department of General Practice, University of Helsinki, Helsingin yliopisto, P.O. Box 3, 00014 Helsinki, Finland

7 Unit of Primary Health Care, Kuopio University Hospital, P.O. Box 100, 70029 KYS Kuopio, Finland

8 Research Department, Social Insurance Institution, Peltolantie 3, 20720 Turku, Finland

used in outpatient treatment of certain severe and chronic medical conditions, including SLE. In order to apply for special reimbursement, a patient has to file a medical certificate, which is normally drawn up at the time of diagnosis by the doctor specialized in SLE treatment. If a sickness causes inability to work, working-aged Finnish citizens are eligible for compensated sickness allowance after ten weekdays waiting period from the SII. The sickness allowance is paid for up to 300 weekdays. If incapacity to work lasts over 300 days, the individual is eligible for disability pension, either temporary or permanent, full-time or part-time. The data of the sickness benefits and WD pensions are gathered into the registries maintained by the SII and the Finnish Centre for Pensions [18].

Working-aged (18–64 years), non-retired incident SLE patients were identified from special reimbursement register between January 1st 2000 and December 31st 2007. The date of reimbursement decision was defined as the onset of SLE (index day). The patients were linked to the national sickness allowance and pension registries from the index date until any of the following events: death, age of 65 years, WD pension, normal old-age pension, or the end of 2008.

The data on WD days comprised of sick leaves over 10 days, temporary, part-time, and permanent WD pensions. The number of all WD days was calculated per patient-year. The cumulative incidence of WD pension contained all permanent WD pensions after the onset of the disease and those long-term temporary WD pensions that continued over the end of follow-up 31.12.2008.

The main causes of the WD pensions were evaluated by the International Classification of Diseases 10 (ICD-10) codes on the pension register data. The data on new WD pensions in the Finnish population were obtained from the same source.

Statistical methods

Descriptive values are expressed as means with standard deviations (SDs) or as medians with interquartile ranges (IQRs). Cumulative incidence for WD pensions with 95% confidence intervals (CIs) was estimated and illustrated by the Kaplan-Meier method. The 95% CIs for annual WD days were obtained by bias-corrected bootstrapping and the linearity across year cohorts was tested by bootstrap-type analysis of covariance with an appropriate contrast. The standardized incidence ratio for a WD pension in SLE cohort is the ratio between observed and expected numbers of WD pensions in the age, sex, and calendar year stratum-specific general population and was calculated with 95% CIs assuming a Poisson distribution.

Results

A total of 446 non-retired 18 to 64-year-old incident SLE patients were identified. Mean age at diagnosis was 42 ± 13 years for 398 females and 46 ± 12 years for 48 males. The median (IQR) follow-up time was 5.3 (3.0, 7.0) years. Twenty-seven (22 females) patients retired on permanent WD pension during the follow-up. The main cause was SLE in 14 (52%) patients, followed by musculoskeletal and psychiatric diseases, with five (19%) patients in both categories. Breast cancer, heart failure, and muscular dystrophy each caused permanent WD pension in one individual.

The cumulative incidences for all type WD pensions are shown in Fig. 1. After 5 years 5.8% (95% CI 3.9 to 8.7) and at the end of follow-up, 8.6% (95% CI 5.6 to 13.1) of the patients received WD pension due to any disease cause. The respective numbers for SLE-associated WD pensions were 3.4% (95% CI 1.9 to 5.8) and 5.0% (95% CI 3.0 to 8.5). The age- and sex-adjusted incidence ratio for WD pension due to any cause was 5.4 (95% CI 3.7 to 7.9) compared to the Finnish population.

Figure 2 shows the annual number of WD days after the SLE diagnosis. The number increased during the follow-up (P for linearity = 0.007). A total of 257 (58%) SLE patients had WD days and the mean number of WD days was 32 (95% CI 28 to 35) days per patient-year among all SLE patients.

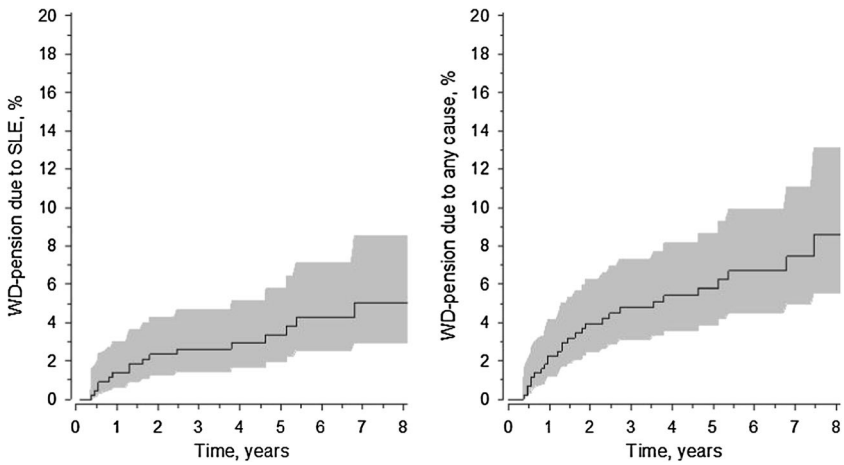

Fig. 1 Cumulative incidence for work disability (WD) pension due to systemic lupus erythematosus (SLE) and due to any cause among 446 working-aged incident SLE patients after the diagnosis of SLE. Gray area shows the 95% confidence intervals

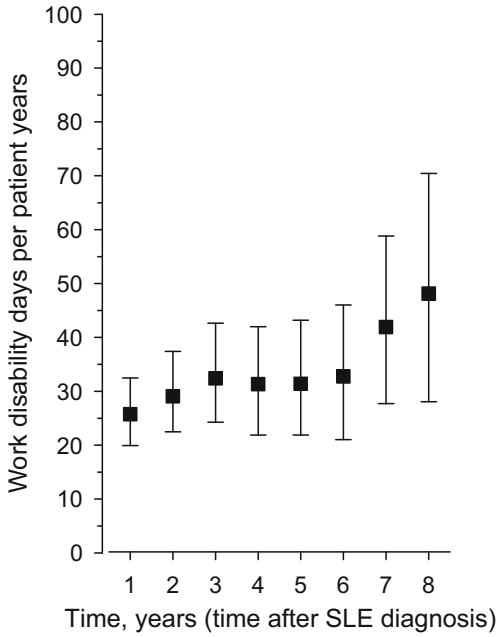

Fig. 2 Number of work disability (WD) days due to any disease cause per patient-year after systemic lupus erythematosus (SLE) diagnosis in the incident SLE cohort

Discussion

In this register-based nationwide longitudinal study, the risk of disability pension was over 5 times higher in incident SLE patients than in the population. The primary cause behind the WD was SLE itself. Many SLE patients have difficulties in maintaining their ability to work already in the early course of the disease in Finland.

The literature on SLE-induced decreased working capacity is scattered and limited. The existing data generally include small numbers of SLE patients and patient identification differs [3–16, 19]. Any comparison between countries is impeded by different work-related societal factors and definitions of WD. Many female patients are homemakers and their lower functional capacity is not considered in WD statistics. WD rates in previous SLE studies range generally between 13 to 43% and disease durations between 3 to 18 years [3–16]. Our results are parallel to the previous data.

The WD studies on early SLE are rare [7, 10, 11]. In a Chinese cross-sectional study, over half of those working-aged SLE patients who failed to work at 10 years after the diagnosis were unable to work already in the first 2 years of disease [10]. A US multi-center study detected permanent WD among 40% of patients after 3.4 years of diagnosis [11]. A Canadian study on incident SLE reported progressively increasing rate of WD along time being 13% at 2 years, 19% at 5 years, and 21% at 10 years [7]. In the present study, within 5 years, 6% of SLE patients were retired due to health grounds, which is a one-third of that in Canada. Strict pension-based definition of WD and unselected SLE patients may partly explain the lower rate in the present study.

A multi-center cross-sectional study from the USA compared the work participation of 344 subjects with SLE to 322 controls. Consistently with the earlier reports, SLE patients had significantly higher rates of WD (31%) compared with controls (4%) [14]. Likewise, a cross-sectional Finnish study on female working-aged patients in a hospital-based cohort showed the rate of permanent WD of 34% in SLE cohort versus 10% of controls. SLE-related cumulative WD within 5, 10, and 20 years since diagnosis was 13, 22, and 47%, respectively [8].

In the present study, 58% of SLE patients had > 10 weekdays lasting WD periods (a mean of 32 days). The number of long-term WD days increased significantly with time since diagnosis. In a German cross-sectional study, 36% of 1248 SLE patients with mean disease duration of 10.7 years were on sick leave at least once in the year preceding the study. The mean annual loss of working time was 9.9 weeks [20]. Consistently, the Carolina Lupus Study on early SLE among 198 patients reported that 21% of SLE patients versus 11% of controls had sickness absence periods lasting over 14 days in the past 12 months [6]. In a previous Finnish study, SLE patients had missed 2.5 times more working days in the past year than controls [8]. A Dutch study showed also tendency for long periods of lost work days due to SLE [5].

The identification of SLE-associated WD in our study are based on reliable official register data in contrast to the most studies relying on patients self-reports either in interviews or in questionnaires [4, 8, 10, 16]. Our study has the strengths of longitudinal study setting, nationwide coverage, and comparison with the general population.

Some limitations should be acknowledged. The present study misses sick leaves lasting ≤ 10 days and therefore underestimates the true number of WD days. Longer follow-up could reveal any trends in work participation along time. The study lacks clinical data and data about fulfillment of diagnostic criteria. Therefore, the disease-related predictors of WD remain unknown. However, for the special reimbursement, diagnosis of SLE was confirmed both by the specialist and the SII. The present study assesses WD over 9 years since the turn of millennium. Further studies with updated data are needed.

In conclusion, the incident SLE patients have significantly higher risk for WD compared to the population. The SLE itself is the leading cause behind excess WD. These observations underline the importance of early occupational and drug therapy interventions in order to keep SLE patients in working life.

Disclosures The authors report following financial activities outside the submitted work: PE has received lecture fees from Abbvie and UCB Pharma and reimbursement of congress costs from Roche and Abbvie. KP has received honoraria from Pfizer, Lilly, MSD, Bristol Myers Squibb, UCB Pharma, Novartis, Roche, and Abbvie and reimbursement of congress costs from Roche, Pfizer, and Abbvie. OKS has received

reimbursement of training and congress costs from Medac, MSD, Abbvie, Roche, and Pfizer. VR has received grant from Competitive State Research Financing of the Expert Responsibility Area of Tampere University Hospital, lecture fees from Pfizer, MSD and Bristol Myers Squibb, and reimbursement of training and congress costs from Celegen, Abbvie, Roche, and UCB Pharma.

There was no legal requirement for approval by an ethics committee, since we used only encrypted register data.

Funding information The study was financially supported by the grants from the Finnish Cultural Foundation, North Savo Regional fund, and the Finnish Rheumatic Disease Research Foundation.

References

1. Gaubitz (2006) Epidemiology of connective tissue disorders. Rheumatology 45:iii3–iii4
2. Huscher D, Merkesdal S, Thiele K, Zeidler H, Schneider M, Zink A, for the German Collaborative Arthritis Centres (2006) Cost of illness in rheumatoid arthritis, ankylosing spondylitis, psoriatic arthritis and systemic lupus erythematosus in Germany. Ann Rheum Dis 65:1175–1183
3. Baker K, Pope J, Fortin P, Silverman E, Peschken C, 1000 Faces of Lupus Investigators, CaNIOS (Canadian Network for Improved Outcomes in SLE) (2009) Work disability in systemic lupus erythematosus is prevalent and associated with socio-demographic and disease related factors. Lupus 18:1281–1288
4. Bertoli AM, Fernández M, Alarcón GS, Vilá LM, Reveille JD (2007) Systemic lupus erythematosus in a multiethnic US cohort LUMINA (XLI): factors predictive of self-reported work disability. Ann Rheum Dis 66:12–17
5. Boomsma MM, Bilj M, Stegeman CA et al (2002) Patients' perceptions of the effects of systemic lupus erythematosus on health, function, income, and interpersonal relationships: a comparison with Wegener's granulomatosis. Arthritis Rheum 47:196–201
6. Campbell Jr R, Cooper GS, Gilkeson GS (2009) The impact of systemic lupus erythematosus on employment. J Rheumatol 36: 2470–2475
7. Dhanhani A, Gignac MAM, Su J, Fortin PR (2009) Work disability in systemic lupus erythematosus. Arthritis Rheum 61:378–385
8. Ekblom-Kullberg S, Kautiainen H, Alha P, Leirisalo-Repo M, Julkunen H (2015) Education, employment, absenteeism, and work disability in women with systemic lupus erythematosus. Scand J Rheumatol 44:157–162
9. Nived O, Andersson M, Lindgren M, Malcus-Johnsson P, Nihlberg A, Nived K, Reimer-Rasmusson G, Sturfelt G, Stahl-Hallengren C, Bengtsson AA (2007) Adherence with advice and prescriptions in SLE is mostly good, but better follow up is needed: a study with a questionnaire. Lupus 16:701–706
10. Mok CC, Cheung MY, Ho LY, Yu KL, To CH (2008) Risk and predictors of work disability in Chinese patients with systemic lupus erythematosus. Lupus 17:1103–1107
11. Partridge AJ, Karlson EW, Daltroy LH et al (1997) Risk factors for early work disability in systemic lupus erythematosus. Results from a multicenter study. Arthritis Rheum 40:2199–2206
12. Sutcliffe N, Clarke AE, Taylor R, Frost C, Isenberg DA (2001) Total costs and predictors of costs in patients with systemic lupus erythematosus. Rheumatology 40:37–47
13. Utset TO, Chohan S, Booth SA et al (2008) Correlates of formal work in an urban university systemic lupus erythematosus practice. J Rheumatol 35:1046–1052
14. Utset TO, Baskaran A, Segal BM et al (2015) Work disability, lost productivity and associated risk factors in patients diagnosed with systemic lupus erythematosus. Lupus Sci Med 2:e000058. https://doi.org/10.1136/lupus-2014-000058
15. Yazdany J, Yelin EH, Panopalis P et al (2008) Validation of the systemic lupus erythematosus activity questionnaire in a large obervational cohort. Arthritis Rheum 59:136–143
16. Zhu TY, Tam LS, Li EK (2012) Labour and non-labour market productivity in Chinese patients with systemic lupus erythematosus. Rheumatology 51:284–292
17. Statistics Finland (2011) www.tilastokeskus.fi. Accessed 15 Nov 2011
18. Rantalaiho VM, Kautiainen H, Järvenpää S, Virta L, Pohjolainen T, Korpela M, Möttönen T, Puolakka K (2013) Decline in work disability caused by early rheumatoid arthritis: results from a nationwide Finnish register, 2000-8. Ann Rheum Dis 72:672–677
19. Baker K, Pope J (2009) Employment and work disability in systemic lupus erythematosus: a systematic review. Rheumatology 48: 281–284
20. Zink A, Fischer-Betz R, Thiele K, Listing J, Huscher D, Gromnica-Ihle E, Specker C, Schneider M, German Collaborative Arthritis Centres (2004) Health care and burden of illness in systemic lupus erythematosus compared to rheumatoid arthritis: results from the National Database of the German Collaborative Arthritis Centres. Lupus 13:529–536