Mortality post hip fracture in Rheumatoid Arthritis compared to general population controls, a population-based study

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BACKGROUND

- We reported a higher incidence of hip fractures in rheumatoid arthritis (RA) than age and sex matched general population controls (3.6 vs. 2.8 per 1000 PY, IRR 1.28).
- Information on the consequences of hip fractures in RA, such as the risk of mortality, is necessary to understand the burden of this problem. .

OBJECTIVES

- To estimate the risk of all-cause mortality post hip fractures in RA compared to the general population.

METHODS

Study Design: We conducted a retrospective cohort study of a population based incident RA cohort with matched controls from the general population using administrative health data from the province of British Columbia (BC).

Study Sample:
- Using physician billing data and a previously published RA definition, we assembled an incident cohort of individuals with RA onset between January 1, 1997 and December 31, 2009.
- Controls (with no inflammatory arthritis) were selected randomly from the general population, and matched 2:1 to RA patients on birth year, gender and index year.
- RA and controls with hip fractures, pathological fractures or Paget's disease prior to RA onset (or index date in controls) were excluded.
- RA individuals and controls with hip fractures (ICD9-CM codes 820.0, 820.2; ICD10-CA codes S72.0, S72.1, S72.2) between 01/1997 and 12/2014 were identified using hospitalization data (up to 25 codes defining reason for admission or complications during hospitalization).

Outcome Definition:
- Death from all-causes were identified using Vital Statistics data.
- In-hospital mortality was defined as mortality occurring during the episode of care for hip fracture and taking into consideration hospital transfers.
- Mortality was evaluated at 90 days, one year, 5 years, and more than 5 years, after hip fracture.

Data: Data were obtained from administrative health databases on all physician visits, hospital admissions, medications dispensed on all individuals with follow-up until December 2014.

Analyses:
- RA individuals and controls were followed from incident hip fracture until death, last health care use, or study end (Dec. 2014).
- Cox-proportional hazards models compared mortality risk in RA vs. controls with incident hip fractures over predefined time intervals post hip fracture.
- Logistic regression was used to model in-hospital mortality
- Models were adjusted for age, sex, socio-economic status, rural/urban, hospital size, fracture type, and comorbidities measured in the year preceding hip fractures.

RESULTS

Table 1. Descriptives of RA and general population cohorts

	RA	General Population
	N = 37,616	N = 75,213
Sample Characteristics		
Nu. person years of follow-up	360,521	732,249
Female, n (%)	24,987 (66%)	49,880 (66%)
Age at index date, mean (SD)	57.3 (16.6)	57.2 (16.6)
Age at hip fracture, mean (SD)	79.5 (10.8)	81.6 (9.3)
Romano comorbidity score, n (%) score>=1	711/1314 (54%)	1089/2083 (52%)
Results		
Nu. of hip fractures	1,314	2,083
Nu. of deaths	715	1,224
Received surgery, n (%)	1220 (92.9%)	1927 (92.5%)
Time to surgery, days, median [25Q,75Q]	1.0 [1.0, 2.0]	1.0 [1.0, 2.0]
Fracture type, transcervical, n (%)	701 (53.4%)	1089 (52.3%)
Transferred to another hospital, n (%)	306 (23.3%)	484 (23.2%)
Hospital size, n (%) large	1,086 (82.6%)	1,762 (84.6%)

Table 2. Mortality post hip fracture in RA relative to general population controls

	In Hospital Mortality		0-90 Day Mortality		90 Day - 1 Year Mortality		1-5 Years Mortality		5 Years + Mortality	
	aHR	95% CI	aHR	95% CI	aHR	95% CI	aHR	95% CI	aHR	95% CI
Model 1: Adjusted for Age + Gender	0.86	(0.66;1.12)	0.81	(0.66;0.99)	1.01	(0.80;1.27)	0.93	(0.81;1.06)	0.87	(0.70;1.08)
Model 2: Same as 1 + SES + Rural	0.85	(0.65;1.10)	0.80	(0.65;0.98)	1.00	(0.80;1.27)	0.92	(0.81;1.06)	0.87	(0.70;1.09)
Model 3: Same as 2 + Hospital Size	0.84	(0.65;1.10)	0.80	(0.65;0.98)	1.00	(0.80;1.27)	0.92	(0.80;1.05)	0.87	(0.69;1.08)
Model 4: Same as 3 + Fracture Type	0.84	(0.65;1.10)	0.80	(0.65;0.98)	1.00	(0.79;1.26)	0.92	(0.80;1.05)	0.86	(0.69;1.08)
Model 5: Same as 4 + Comorbidities	0.82	(0.63;1.07)	0.78	(0.64;0.96)	0.96	(0.76;1.22)	0.89	(0.78;1.02)	0.85	(0.68;1.07)

CONCLUSION

➤ Despite higher incidence of hip fractures, all-cause mortality over 5 years post fracture did not differ between the RA and matched general population controls, except for a slightly lower 90-day mortality.
➤ The risk for all-cause mortality at 90 days was 22% lower for RA than controls after adjusting for sociodemographic and medical factors.

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