VALIDATION OF FRAGILITY FRACTURES IN PRIMARY CARE ELECTRONIC MEDICAL RECORDS: A POPULATION-BASED STUDY

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Introduction

Electronic medical records databases use validated lists of ICD (or other) codes to identify fractures. These, however, are not specific enough to disentangle traumatic from fragility fractures.

Aims

We report on the proportion of fragility fractures identified amongst a random sample of coded fractures in SIDIAP, both overall and after stratification by fracture site.

Material and methods

- Retrospective observational study in 6 of the 279 primary care centers includes in the SIDIAP database (www.sidiap.org).
- SIDIAP contains clinical information from primary care records, hospital admissions, and pharmacy invoice data for >5 million patients (80% of the population) in Catalonia, Spain.
- Participants:
  - All subjects aged ≥50 years old.
  - A clinical fracture registered in 2012 using pre-specified lists of ICD-10 codes.
  - Those with a diagnosis of cancer were excluded.
- Exclusion criteria:
  - patients did not respond,
  - had a dementia or a serious psychiatric disease,
  - fracture previous to period study
  - or died during the study.
- Data on fracture type (traumatic or fragility), site, as well as on patient characteristics were collected, previous verbal consent.
- Statistics: we used lineal regression simple models to identify predictors of fragility fractures.

Results

I- Population flow chart

616 subjects with a registered fracture in 2012

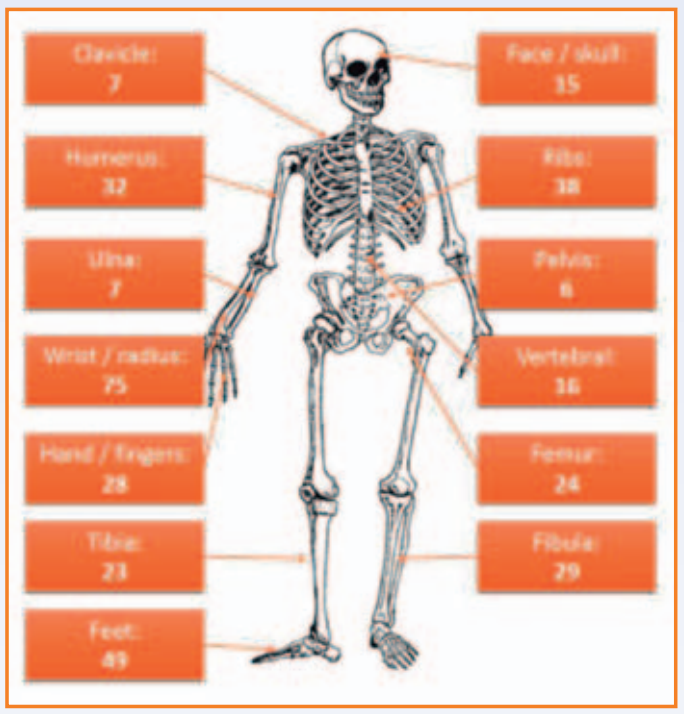
- 104 patients did not respond
- 21 patients died

491 patients were contacted

- 97 no fracture
- 21 previous fracture
- 49 dementia or psychiatric disease

331 patients met the inclusion criteria

II- Baseline characteristics:



- 225/349 (64.5%) were fragility fractures:
- 91.7% for hip
- 87.7% for spine
- 80.5% for any major fracture

III- Site and type of fractures:

Subjects included	All (n=331)	Fragility fractures (n=215)	Traumatic fractures (n=116)	P value
Age; mean ± DE	69.85 ± 11.13	72.23 ± 10.48	65.44 ± 11.01	<0.0001
Gender ♀; n(%)	253 (76.4)	183 (85.1)	70 (60.3)	<0.0001
BMI (kg/m²); mean ± DE	28.49 ± 5.06	25.79 ± 9.55	24.92 ± 10.79	0.466
Total fractures; n	349	226	123	
Previous osteoporosis; n(%)	86 (26.0)	68 (31.6)	18 (15.5)	0.001
Previous anti-osteoporosis treatment; n(%)	42 (12.7)	34 (15.8)	8 (6.9)	0.02
Patients with previous fractures; n(%)	67 (20.2)	52 (24.2)	15 (12.9)	0.015

IV- Key predictors of fragility fractures:

KEY IDENTIFIED PREDICTORS *	Odds Ratio	95% CI
FEMALE GENDER	3.76	2.22 – 6.42
AGE		
50 to 59	REF	
60 to 69	1.95	1.04 – 3.71
70 to 79	3.41	1.81 – 6.53
>80	5.66	2.69 – 12.50
PREVIOUS OSTEOPOROSIS	1.92	1.29 – 2.94
PREVIOUS ANTI-OSTEOPOROSIS TREATMENT	2.53	1.19 – 6.07
PREVIOUS FRACTURES	2.15	1.17 – 4.13

Conclusions

In patients ≥50 years old from the SIDIAP database the majority of hip, vertebral and major fractures are for fragility. Female gender, age ≥ 60, previous fractures and previous osteoporosis / anti-osteoporosis treatment are the key predictors of a fragility fracture. These results support the use of SIDIAP database in osteoporotic fractures studies.