Differences in Patient Characteristics between Asthma Patients with and without Eosinophil Measurements

Poster No P792

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CONCLUSIONS

✓ In real life data, age and female gender increase the probability of getting a blood eosinophil measurement.

✓ Underlying comorbidity was mainly a determinant in databases with a relatively low proportion of blood eosinophil measurements amongst asthma patients, indicating the reason for the measurement might have been other than asthma.

✓ This selectivity in measurement might change if blood eosinophil measurement, as part of asthma management, becomes routine practice in primary care.

Background & Objectives

The association between high blood eosinophils and risk of asthma exacerbation is well established. In real life, there is scarce data available on patient characteristics of asthma patients with and without blood eosinophil measurements, irrespective of the blood eosinophil value.

Methods

- Multinational, multidatabase retrospective cohort study using routinely collected electronic health care data from 4 European countries: the Netherlands (IPCI), Denmark (Aarhus), UK (CPRD) and Spain (SIDIAP), all members of the EU-ADR alliance
- Study period: 2008–2017
- Study population: adult patients with asthma (= asthma disease code with prescriptions/dispensing of asthma drugs within 3 months before or after asthma diagnosis) and at least 1 year of follow-up in the respective database
- Follow-up time: from asthma diagnosis or start of study period until end of observation in database or end of study period
- All blood eosinophil measurements during follow-up were extracted
- Patient characteristics: gender, age at start follow-up, smoking, anxiety/depression, atopy, cancer, cardiovascular and cerebrovascular disease, chronic rhinosinusitis, diabetes mellitus, gastroesophageal reflux disease, nasal polyposis, obesity. All characteristics were defined at start of follow-up.

Statistical analysis:
- Relative risks (RR) for the outcome, presence of blood eosinophil measurement, were estimated for each patient characteristic, crude as well as adjusted for age and follow-up time.

Results

- The asthma cohort consisted of 660,185 patients of whom 60% had at least one blood eosinophil measurement, with substantial differences between the databases (Table 1).
- Older age (Table 1), female gender, and underlying comorbidity increased the probability of presence of blood eosinophil measurement (Figure 1).
- Determinants of presence of blood eosinophil measurement were most pronounced in Aarhus & IPCI, both data-bases where the proportion of patients with blood eosinophil measurement was lower.

Table 1. Asthma patients with and without blood eosinophil measurement

	IPCI (NL)		Aarhus (DK)		CPRD (UK)		SIDIAP (SP)	
	N = 108,199		N = 30,075		N = 318,794		N = 203,117	
Eosinophil measurement	Present	Absent	Present	Absent	Present	Absent	Present	Absent
Number (%)	31,008 (29%)	77,191 (71%)	18,028 (60%)	12,047 (40%)	194,688 (61%)	124,106 (39%)	150,959 (74%)	52,158 (26%)
Males, %	31%	42%	38%	50%	35%	53%	32%	50%
Age, mean (SD)	48.6 (17.5)	45.0 (17.7)	46.3 (18.0)	39.1 (19.3)	49.6 (18.3)	39.2 (16.9)	48.8 (19.5)	40.0 (18.2)

NL=the Netherlands. DK=Denmark. UK=United Kingdom. SP=Spain.
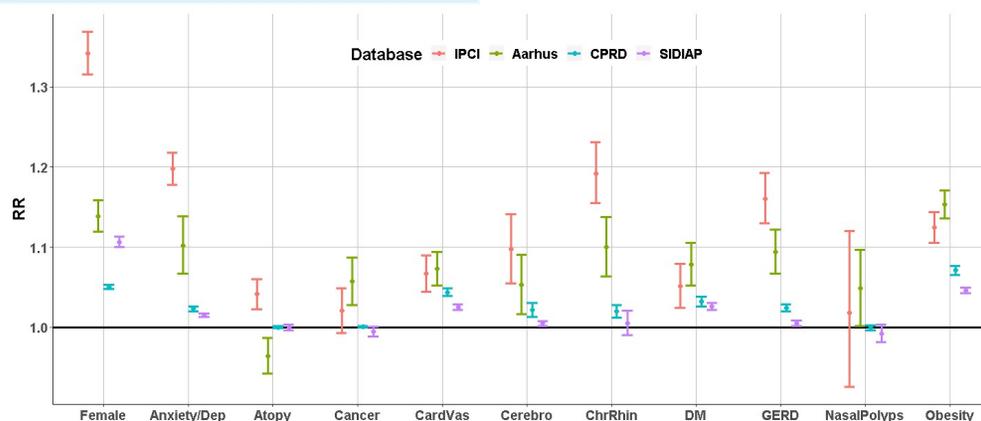
Anxiety/Dep = Anxiety or depression
CardVas = Cardiovascular disease
Cerebro = Cerebrovascular disease
ChrRhin = Chronic Rhinosinusitis
DM = Diabetes Mellitus
GERD = Gastroesophageal reflux disease
NasalPolyps = Nasal polyposis

Figure 1. Relative risks for presence of blood eosinophil measurement, adjusted for age and follow-up time

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