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Acute exacerbation phenotypes of asthma and COPD: impact on clinical outcomes

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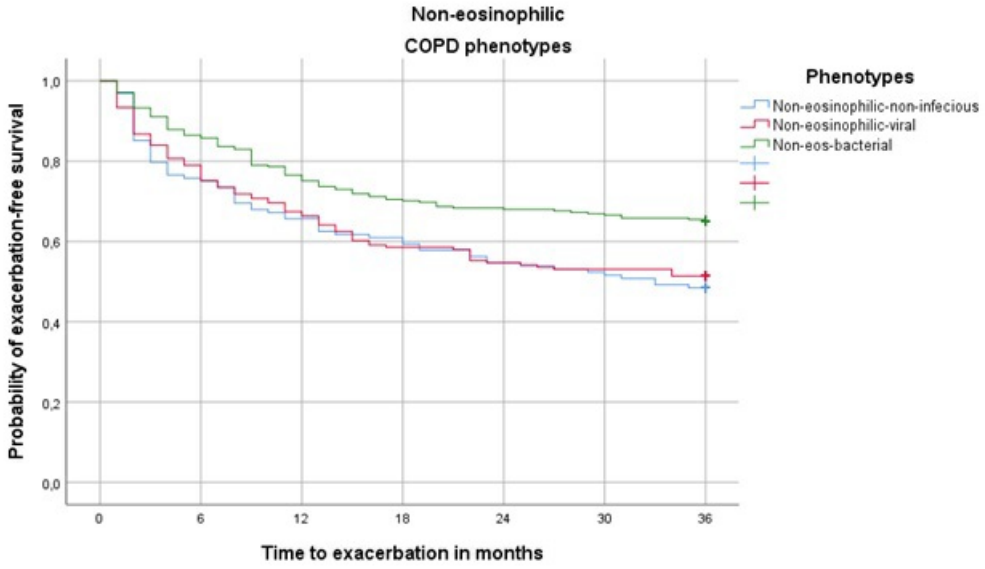
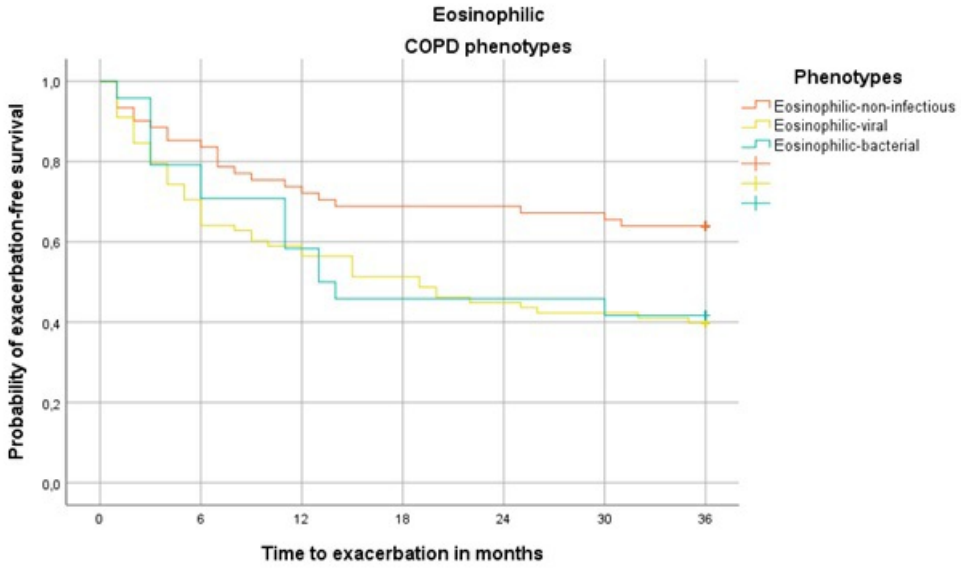
Introduction: Acute exacerbation (AE) phenotypes of asthma and COPD may have prognostic value. We aimed to study the risk of readmission with different AE phenotypes based on blood eosinophils (eos) and CRP.

Method: Retrospective single-center study of asthma and COPD patients admitted with AE between Jan 2010 and Dec 2011, with 3-yr-follow-up. Subjects were grouped by blood eos with a cut-off of ≥2%. They were stratified by CRP: non-infectious (CRP ≤10 mg/L), viral (CRP >10 and <40 mg/L), bacterial (CRP ≥40 mg/L). Time to readmission was analyzed using Kaplan-Meier within eos and non-eos groups.

Result: 294 asthma (median age 39 yrs, 33.4% smokers) and 795 COPD (median age 73 yrs, 49.9 % smokers) were included. Time to readmission differed between AE phenotypes in COPD but not in asthma. In non-eos COPD, the mean time in months (MO) to AE was similar in non-infectious and viral phenotypes [22.7 mo (95% CI: 22.2-25.2) and 23.0 mo (22.9-25.1), respectively], but shorter than bacterial AE [26.9 mo (25.3-28.4), p<0.01]. However, in eos COPD, the mean time to AE was similar in viral and bacterial phenotypes but significantly shorter than non-infectious AE [19.8 mo (16.5-23.1) vs 26.8 mo (22.7-29.8), p=0.006] and no difference was found for non-infectious vs. bacterial AE [26.8 mo (22.7-29.8) vs 20.3 mo (14.5-26.1), p=0.07]

Conclusion: A combination of high blood eos and CRP predicts the occurrence of the next AE in COPD, but not in asthma.


Non-eosinophilic
COPD phenotypes
Probability of exacerbation-free survival
1,0
0,8
0,6
0,4
0,2
0,0
0
6
12
18
24
30
36
Time to exacerbation in months
Phenotypes
Non-eosinophilic-non-infecious
Non-eosinophilic-viral
Non-eos-bacterial


Eosinophilic
COPD phenotypes
Probability of exacerbation-free survival
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0,8
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Time to exacerbation in months
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Eosinophilic-non-infectious
Eosinophilic-viral
Eosinophilic-bacterial