Risk factors for asthma exacerbation severity and clinical outcomes: a retrospective cohort analysis

Study Cohort

367 asthma patients
≥ 18 years, 60% female

Emergency department

644 Asthma Exacerbations

Objective & Study design

Identify factors associated with exacerbation outcomes and determine their predictive value

Linear mixed models & LASSO regression

Exacerbation outcomes:

1. Hospital admission
2. Intensive care admission
3. New Early Warning Score
4. Oxygenation efficiency
5. Length of hospital stay

Results & Conclusion

Significant predictors

Predictive value

Hospital admission
- Radiographic infiltrate
- C-reactive protein
- Oral steroids
- train AUC = 0.693
- test AUC = 0.631

Intensive care admission
- Blood neutrophils
- Season
- Oral theophylline
- Non specific trigger
- train AUC = 0.905
- test AUC = 0.586

New Early Warning Score
- Radiographic infiltrate
- Oral theophylline
- LTRA
- Symptom duration
- 18.8% of variability explained

Oxygenation efficiency
- Radiographic infiltrate
- Oral theophylline
- Blood neutrophils
- Smoking
- Blood eosinophils
- 15.2% of variability explained

Length of hospital stay
- Radiographic infiltrate
- Inhalation steroids
- 9.0% of variability explained

Patient characteristics and clinical markers had moderate-to-poor value in predicting exacerbation outcomes

AUC = Area under the curve; LASSO = Least absolute shrinkage and selection operator; LTRA = Leukotriene receptor antagonist