Effectiveness of benralizumab in patients with severe asthma

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Rationale

Benralizumab, an interleukin-5 receptorα antibody, can be used in patients with severe asthma resistant to existing treatments.

Benralizumab is said to be effective in eosinophilic severe asthma.

Purpose

This retrospective study aimed to clarify the usefulness of benralizumab in clinical practice.

Subjects

We included 24 patients who were administered benralizumab between April 2018 and July 2019.

Methods

- Clinical parameters were evaluated 4 weeks and 24 weeks after administration.
- Clinical parameters for predicting 'improvement of FEV1 with minimum significant difference of 10.38%*' were examined using ROC analysis.
- Compared frequency of exacervation between 6 months before benralizumab and 6 months after benralizumab.

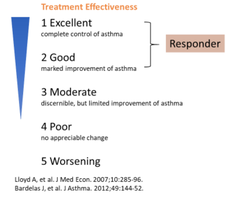
Clinical parameters

- Global Evaluation of Treatment Effectiveness (GETE) scale
- Asthma Control Test (ACT)
- Asthma Control Questionnaire-5 (ACQ-5)
- peripheral eosinophil count
- FeNO (NIOX-VERO)
- pulmonary function (CHESTAC-8800)

Minimal clinically important difference (MCID) of ACT is 3 points.

MCID of ACQ is 0.5 points within-person change.

GETE scale



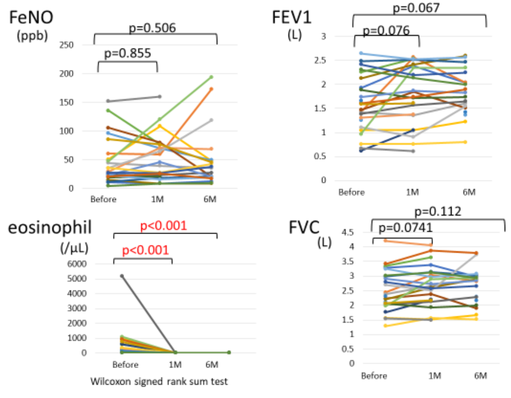
Lloyd A, et al. J Med Econ. 2007;10:285-96.
Bardelas J, et al. J Asthma. 2012;49:144-52.

Result

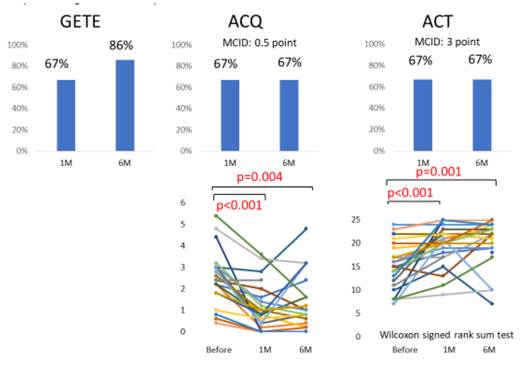
	n = 24
Age, y	55 (28-82)
Male/Female, n	9/15
BMI, kg/m^2	23.1 (16.5-30.3)
Duration of disease, years	26 (2-70)
Smoking never/ex, n	17/7
Allergic rhinitis, n	8
Sinusitis, n	9
Eosinophilic sinusitis, n	5
Atopic, n	12
ICS/LABA	24
LTRA, n	20
Tiotropium, n	18
OCS total, n	17
OCS every day/ as needed	9/8
dosage of OCS, mg	15 (5-20)

	n = 24
ACQ	2.4 (0.4-5.4)
ACT	15 (7-24)
FeNO, ppb	29.5 (5-152)
Blood eosinophil, /ul	228 (0-5191)
Total IgE, IU/ml	68.8 (5-678)
FVC, L	2.35 (1.29-4.21)
%FVC, %	89.8 (8.6-112.1)
FEV1, L	1.53 (0.62-2.65)
%FEV1, %	72.2 (32.6-111)
%MMF, %	27.8 (8.2-109)

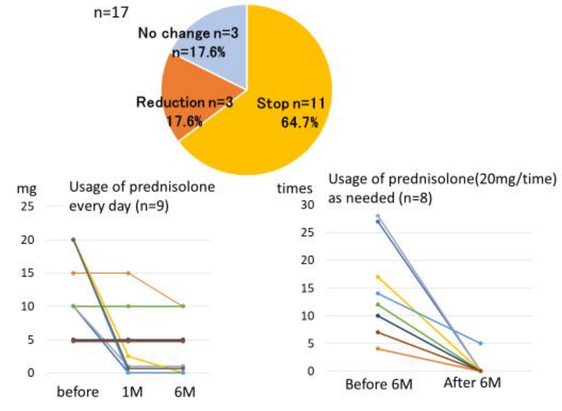
Change of parameters



Symptom score improved in about 70% patients, and the effect lasted for 24 weeks.



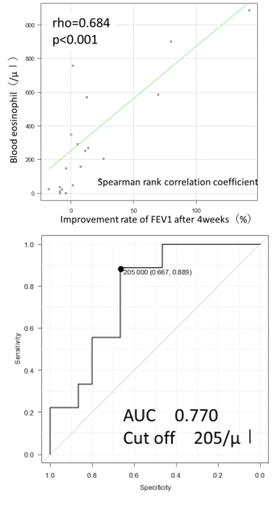
Usage of steroid after benralizumab



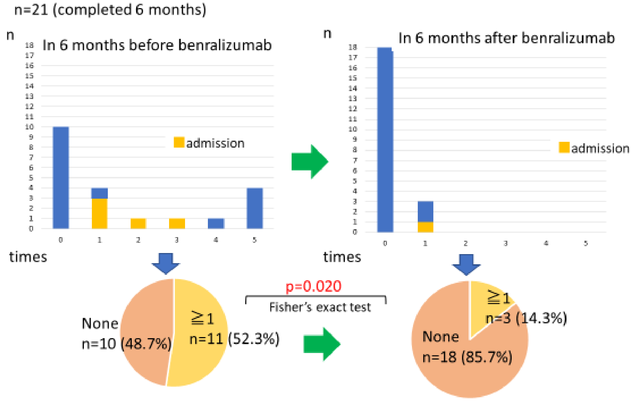
Comparison between responder and non-responder to benralizumab

	Responder N=9	Non-responder N=15	p
Age, y	54 (28-76)	56 (44-82)	0.143
Female, n	8 (87%)	7 (47%)	0.080
Smoking habit, n	1 (11%)	6 (40%)	0.182
Duration of disease, y	25 (2-40)	27 (2-70)	0.738
Sinusitis, n	5 (56%)	4 (27%)	0.212
BMI, kg/m^2	21.9 (19.5-26.3)	24.2 (16.5-30.3)	0.200
Atopic, n	3 (33%)	9 (60%)	0.400
Steroid usage, n	7 (78%)	9 (60%)	0.657
ACQ	2.6 (0.6-4.4)	2.4 (0.4-5.4)	0.491
ACT	15 (8-24)	16.5 (7-23)	0.905
FeNO, ppb	48 (11-136)	29 (5-152)	0.444
Blood eosinohphil, /ul	569 (81-5191)	133 (0-1008)	0.032
Toal IgE, IU/ml	58 (57-69)	106 (5-678)	0.692

Moderate positive correlation was found between the improvement rate of FEV1 and blood eosinophil count before treatment.



Frequency of exacerbation



Conclusion

Benralizumab improved symptoms and pulmonary function depending on blood eosinophil count, and reduced the frequency of exacerbation.

ROC analysis revealed that a 10.38% improvement in FEV1 was predicted by the eosinophil count before treatment with the best cut-off value of 205/μl.