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Title: Impact of obesity on markers of asthma severity, control, health-related quality of life (HrQOL) and eosinophilia

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Body: Background: Asthma and obesity have a complex relationship. Some studies suggest higher incident asthma in obese patients, while others suggest risk of misdiagnosis (Scott S et al, Chest 2012;141:616-24). Higher BMI is linked to poorer HrQOL and asthma control (Lavoie K et al, Respir Med 2006;100:648-57). Aim: To study influence of obesity on asthma severity (FEV1), blood eosinophils, Asthma Control Test (ACT) and Asthma Quality of Life Questionnaire (AQLQ) scores in patients attending a tertiary asthma clinic. Methods: Retrospective review of patients (N=108) attending the Royal Liverpool difficult asthma service. Asthma diagnosed by specialists. Hypothesis testing using t-test & z-test. Results: Mean (SD) age 49.3 (17.9) & BMI 30.0 (7.04).

Table 1

	Non-obese (BMI<30) (N=62)	Obese (BMI>=30) (N=46)	
FEV1 (l) (Mean)	2.37	2.00	p=0.005
FEV1% (Mean)	84.73	79.87	p=NS
Blood Eosinophils (Mean)	0.29	0.33	p=NS
% +ve Eosinophils (>=0.5)	13%	26%	p=0.04
Total IgE (Mean)	291.33	171.84	p=NS
% non-atopic (IgE<100)	53%	61%	p=NS
AQLQ (Mean)	3.9	3.5	p=0.06
ACT (Mean)	13.9	12.2	p=0.05
% on Step 5	21%	33%	p=NS

Mean FEV1 was lower in obese asthmatics (2.3 V 2.0). No difference was seen in mean blood eosinophils

between groups. However, significantly higher proportion of obese asthmatics had uncontrolled eosinophilia (26% V 13%). Obese patients also had worse AQLQ and ACT scores, both tending towards significance. A higher proportion of obese asthmatics were on step 5 treatment (33% V 21%). Conclusions: In our study, obese asthmatics had worse HrQOL, asthma control and FEV1, with a higher proportion on BTS step 5 treatment. This may reflect greater severity in this group, but may also be due to loss of control.