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**Title:** The effect of a single high dose vitamin D3 on neutrophilic airway inflammation in nonatopic asthma

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**Body:** Rationale: Vitamin D deficiency has been associated with asthma and increased risk of respiratory tract infections. An infectious origin in its turn, has been proposed for nonatopic asthma (Joseph Ann All Asthma Immun 2003) as well as neutrophilic asthma (Simpson Thorax 2007). Vitamin D enhances anti-microbial defence and might thereby influence the inflammatory process in the airways. Therefore, we hypothesized that treatment with high dose vitamin D3 reduces neutrophilic airway inflammation in patients with nonatopic, neutrophilic asthma Methods: 28 nonatopic, neutrophilic ( $\geq 53\%$  sputum neutrophils (Spanevello, AJRCCM 2000)) stable asthma patients were included in a randomized double-blind placebo controlled trial. Patients received 400000 IU vitamin D3 or placebo orally in one dose. All completed questionnaires and underwent blood sampling, lung function tests and sputum induction at baseline and after 8 weeks Results: Baseline characteristics were similar in both arms. Results: see table

	Placebo		Vitamin D		p (between group)
	baseline	8 wks	baseline	8 wks	
Vitamin D, nmol/l	59 (30-113)	57 (34-92)	56 (27-98)	92 (54-115)	0.001
sputum neutro, %	74 (63-93)	68 (36-92)	75 (55-98)	79 (16-97)	0.4
FEV1/VC,%pred (SD)	95 (11.1)	92 (9.6)	94 (9.8)	95 (8.8)	0.09
ACQ	1.2 (0.1-2.6)	1.1 (0.1-2.6)	1.2 (0.1-3.1)	0.9 (0-2.9)	0.007

**Conclusion:** Treatment with a single high dose vitamin D3 in nonatopic, neutrophilic asthma, does not reduce neutrophilic inflammation, but improves ACQ as compared to placebo Implications: The association between vitamin D and asthma is not explained by its effect on sputum neutrophils. The improvement in asthma control by vitamin D suggests that other beneficial mechanisms might be involved.

