Reference level of serum urate for clinically evident incident gout

I read the interesting study entitled 'Relationship between serum urate concentration and clinically evident incident gout: an individual participant data analysis' conducted by Dalbeth and colleagues.[1] Their study showed the cumulative incidence of gout was increased with the serum urate levels and the cumulative years. The reference level of serum urate below which the risk of damage is low has not been completely clarified. The benchmark dose (BMD) method, first described by Crump in 1984,[2] has been widely used in the field of health risk assessment. BMD is defined as the exposure level corresponding to a predetermined increase in the probability of an adverse response (eg, 1%–10%) above the background level.[3] The BMD method uses all dose-response data from a study.[4] The BMDL (lower confidence limit of BMD) has an advantage compared with the no observed adverse effect level or low observed adverse effect level.[3 5] Dalbeth and colleagues[1] have shown the cumulative incidence of clinically evident incident gout was increased with the increase of serum urate. We roughly calculated the BMDL in men (table 1) by using gamma model (benchmark response=1%) based on the data in table 2 (the doses of baseline serum urate were set as 5, 6.5, 7.5, 8.5, 9.5 and 11 mg/dL). The reference levels of serum urate were 7.16 mg/dL by 3 years, 6.86 by 5 years, 6.02 by 10 years and 5.49 mg/dL by 15 years, respectively. For those subjects with serum urate <7.16 mg/dL, their risk of gout was low 3 years later. However, we did not have the exact data of serum urate. It would be very interesting if they can calculate the BMDL of serum urate in men and women at different cumulative years, which may be helpful in the management of gout.

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Table 1 The benchmark dose (BMD) and lower confidence limit of BMD (BMDL) of serum urate in men at different cumulative years

	3 years	5 years	10 years	15 years
BMD (mg/dL)	7.37	7.03	6.28	5.81
BMDL (mg/dL)	7.16	6.86	6.02	5.49

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Contributors XC was responsible for the concept and writing of the paper. XC and XD contributed to the concept. XD contributed to the concept and did the revising along with XC.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent Detail has been removed from this case description/these case descriptions to ensure anonymity. The editors and reviewers have seen the detailed information available and are satisfied that the information backs up the case the authors are making.

Provenance and peer review Not commissioned; internally peer reviewed.

To cite Chen X, Ding X. *Ann Rheum Dis* 2019;**78**:e41.

Received 4 March 2018
Accepted 7 March 2018
Published Online First 21 March 2018

Linked

► http://dx.doi.org/10.1136/annrheumdis-2018-213372

Ann Rheum Dis 2019;**78**:e41. doi:10.1136/annrheumdis-2018-213355

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