

### Key messages

- A high participation rate in anonymous HIV surveillance resulted from frank discussion with prisoners, use of saliva samples, and, for study purposes, self completion questionnaires
- The proportion of injecting drug users differed according to residence before prison: 41% of Glasgow residents, 21% of Edinburgh residents, and 11% of those resident elsewhere
- A quarter of injecting drug users in Glenochil prison had started injecting while in some prison
- Between a quarter and a third of men who injected drugs in Glenochil prison in January to June 1993 became infected with HIV while in prison
- Widespread risk of bloodborne virus infections in British prisons demands urgent attention

risk factor for recent HIV infection and should be asked about in future HIV surveillance of injecting drug users or when HIV is diagnosed.

The predilection of prison populations for bloodborne virus infections is not a new observation. Because of a more than 10 times higher prevalence of previous hepatitis B infection and carriage rates among prison inmates the UK Blood Transfusion Services ceased donor sessions in prisons in the early 1980s (J Barbara, T Wallington, personal communications). This study emphasises a widespread ongoing risk of bloodborne virus infection within prisons which demands urgent attention in order to safeguard future inmates and the community.

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## Short stature and diabetic nephropathy

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Recent studies have suggested that low birth weight is associated with a reduced number of nephrons and hypertension in later life,<sup>1,2</sup> both well known risk factors for renal disease. An inverse correlation between microalbuminuria and height, the latter known to vary directly with birth weight,<sup>3</sup> has been shown in non-diabetic men.<sup>4</sup> We investigated the association between adult height and diabetic nephropathy in a cross sectional study of a cohort of insulin dependent diabetic patients attending the Steno Diabetes Center in 1984.<sup>5</sup>

### Patients, methods, and results

We selected patients according to the following criteria: age  $\geq 18$  years, a duration of diabetes  $\geq 5$  years, and age at onset of diabetes  $\leq 40$  years. In all, 951 patients (500 men; mean age 40 (SD 13) years; mean age at onset 18 (10) years) were enrolled (97% of those eligible). We examined urinary albumin excretion rate

(24 hour urine collections, radioimmunoassay) and height (to the nearest centimetre and given as integers). On the basis of urinary albumin excretion rate the patients were stratified into three groups: those with normal rate of excretion (normoalbuminuria) ( $\leq 30$  mg/24 h, n=563); with microalbuminuria ( $> 30$  and  $< 300$  mg/24 h, n=214); and with macroalbuminuria (indicating diabetic nephropathy) ( $\geq 300$  mg/24 h in two out of three consecutive samples, n=174). Men and women were analysed separately owing to differences in height. Results were analysed with the programs of the SAS Institute (Cary, North Carolina).

Men with macroalbuminuria were significantly shorter (mean height 175.3 (SD 7.3) cm, n=98) than patients with microalbuminuria (177.0 (6.1) cm, n=113) or with normoalbuminuria (177.9 (6.9) cm, n=289) (P=0.004). As height and age at onset of diabetes and current age were associated a multiple logistic regression analysis was performed with patient group (ordered categorical variable normoalbuminuria, microalbuminuria, macroalbuminuria) as dependent variable and height, age, and age at onset of diabetes as independent variables. Height was included in the final model, with a reduction in the risk of developing diabetic nephropathy of 3.3% (95% confidence interval 0.77% to 5.8%) per centimetre increase in height.

Poor glycaemic control is a risk factor both for the development of incipient diabetic nephropathy (indicated by microalbuminuria) and overt diabetic

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	Men					Women				
	No of men	Height (cm)	Difference between groups (95% confidence interval)	Age (years)	Age at onset of diabetes (years)	No of women	Height (cm)	Difference between groups (95% confidence interval)	Age (years)	Age at onset of diabetes (years)
Normoalbuminuria	154	177.9 (6.7)	2.1 (0.3 to 3.9)†	46 (10)	28 (6)	125	165.4 (6.5)	0.9 (-1.3 to 3.2)†	46 (11)	29 (6)
Microalbuminuria	32	176.1 (4.9)		52 (10)	31 (6)	29	164.6 (6.0)		49 (14)	27 (6)
Macroalbuminuria	30	175.4 (6.6)		52 (11)	27 (5)	17	164.4 (8.0)		58 (8)	28 (5)
P value*		0.08		0.001	0.05		0.70		0.001	0.45

\*Analysis of variance. †Normoalbuminuria v microalbuminuria and macroalbuminuria (P=0.03, men; P=0.40, women).

nephropathy and for growth retardation during childhood. To adjust for this confounding effect on height we evaluated patients with onset of diabetes after the age of 19 (n=387); the difference in height between the patients with normoalbuminuria and those with microalbuminuria and macroalbuminuria was still significant (P=0.03, with the *t* test) (table). In women no significant relation existed between height and albuminuria group, but the trend was the same as in men (mean height 163.6 (SD 7.1) cm, n=76; 165.4 (7.0) cm, n=101; and 165.0 (6.2) cm, n=274) for patients with macroalbuminuria, microalbuminuria, and normoalbuminuria respectively (P=0.18).

### Comment

Our data support the hypothesis that short stature is related to development of diabetic nephropathy in men. The difference between the sexes was also shown in a study of non-diabetic subjects.<sup>4</sup> Moreover, poor glycaemic control in the patients with onset of diabetes in early childhood leading to impaired growth and increased risk for developing nephropathy was not the sole explanation of the relation between height and nephropathy as this relation was also shown in patients with onset of diabetes after the age of 19.

Factors that lead to impaired intrauterine somatic growth also give rise to an inborn reduction in the number of nephrons both in animal models and in

humans.<sup>1</sup> Fewer nephrons results in a diminished glomerular filtration surface area, leading to systemic and glomerular capillary hypertension. Furthermore, evidence from experimental studies of rats born to mothers exposed either to a restriction of dietary protein or to gentamicin during pregnancy suggests that fewer nephrons at birth initiates a postnatal process of progressive glomerular injury.<sup>1</sup> Thus low birth weight related to short stature indicates congenital oligonephropathy and thereby could indicate an increased risk for developing diabetic nephropathy. In conclusion, our study supports the hypothesis that genetic predisposition or factors operating in utero or early childhood, or both, contribute to the development of diabetic nephropathy in men.

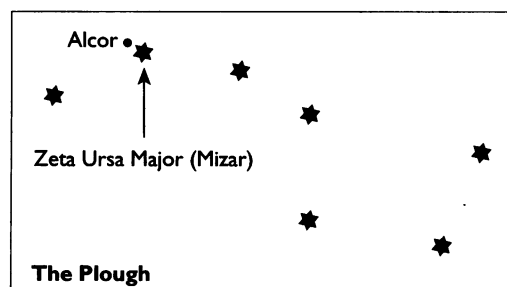
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## SEEING STARS

### The Arabic eye test revisited

Go out on a clear evening with several friends and observe the Great Bear—Ursa Major. Ask your friends, presuming they have good vision with or without glasses, if they can see anything different or peculiar affecting the constellation,



especially those stars forming the tail of the bear. It is guaranteed they will report that zeta Ursa Major is not one but two stars. These are "Mizar," the larger of the two, and "Alcor." The separation of these two stars is known as the Arabic eye test,<sup>1</sup> and has been used in antiquity to test children's eye sight.

Moore contends that because these two stars are so easily separated they cannot be the test of vision, as described by the ancient Arabs.<sup>1</sup> The separation of the two stars, 11.8 minutes of arc, makes them easily resolvable by the human eye, which is capable of resolution to one minute of arc.<sup>2</sup>

Moore seeks further explanation. Use a small telescope and observe the pair, the "Horse and his Rider."<sup>1</sup> Remarkably four stars are to be seen. There are two Mizars separated by 14.5 seconds, obviously not resolvable by the naked eye and of different light intensities. Between the Mizars and Alcor is a very faint star, Sidus Ludovicianum. This latter star has never been known to be brighter than it is today, cannot be seen by the naked eye although it is halfway between the Mizars and Alcor developing approximately 6 minutes of arc. If Sidus Ludovicianum were part of the eye test then three stars would appear to require separation and not two as described.

Recently I conducted an experiment with children at my son's birthday party. They were all 10 year olds, and it was a clear evening. I took them outside and pointed out the tail and rump of the Great Bear, sometimes known as the "Big Dipper" or the "Plough," and asked if they observed anything unusual. No child had glasses. All reported seeing the horse and his rider without specifically having zeta Ursa Major, the centre star of the Plough's handle, identified. No child reported seeing three stars.

I personally have good eyesight. I do not wear glasses, but cannot differentiate the two apparent stars and believe that the separation of the two is indeed the Arabic eye test as described.<sup>1</sup>—MAURICE WOOLDRIDGE is a consultant paediatrician in Saudi Arabia

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