proposed previously could be used to identify sections of the population at high risk of chronic disease from high total plasma cholesterol concentration, low high density lipoprotein cholesterol concentration, and hypertension who might benefit from weight management.

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Increased serum concentration of von Willebrand factor in non-insulin dependent diabetic patients with and without diabetic nephropathy

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Cardiovascular morbidity and mortality are increased in non-insulin dependent diabetic patients, particularly if microalbuminuria or macroalbuminuria is present.¹ A systemic endothelial dysfunction may be the pathogenic factor linking albuminuria to atherosclerosis in these patients,² as originally suggested in insulin dependent patients.³ Previous studies have suggested that serum von Willebrand factor concentration is an indicator of generalised endothelial damage and contributes to platelet aggregation to the vascular endothelium, the first step in thrombosis. We evaluated the validity of this concept by measuring the serum concentrations of von Willebrand factor in non-insulin dependent diabetic patients with or without diabetic nephropathy.

Patients, methods, and results

We studied a prevalence cohort of white non-insulin dependent diabetic patients under 76.¹ Patients were stratified into three groups: those with normoalbuminuria (≤ 30 mg/24 h, n=323), microalbuminuria (31-299 mg/24 h, n=151), and persistent macroalbuminuria (≥ 300 mg/24 h in two of three

consecutive samples, n=75). Diabetic nephropathy was diagnosed in 47 of 75 macroalbuminuric patients on the basis of previously established clinical (n=20) or biopsy (n=27) based criteria.⁴ Sixty six healthy non-diabetic subjects served as controls. We analysed the results by using the statistics package SPSS for Windows version 6.0.

The table gives the results. The serum concentrations of von Willebrand factor, measured by microenzyme linked immunoabsorbent assay,⁵ were significantly higher in all of the diabetic groups than in the controls. Furthermore, the patients with a urinary albumin excretion rate above 30 mg/24 h had significantly higher serum von Willebrand factor concentrations than the normoalbuminuric patients. This was the case even after adjustment for the presence of cardiovascular disease (difference 1.15 (95% confidence interval 1.07 to 1.24) U/ml).

There was a positive association between the logarithmically transformed urinary albumin excretion rate and serum von Willebrand factor concentration, which was independent of age, sex, blood pressure, tobacco smoking, plasma total cholesterol concentration, haemoglobin A_{1c}, and presence of cardiovascular disease (multiple linear regression analysis: $r=0.20$; $P<0.0001$). The presence of cardiovascular disease (World Health Organisation questionnaire, Minnesota coded electrocardiograms) was associated with higher rates of urinary albumin excretion, together with higher serum concentrations of von Willebrand factor (logistic regression analysis: $r=0.16$; $P<0.0001$ and $r=0.11$; $P<0.005$, respectively). The positive association between urinary albumin excretion and cardiovascular disease was independent of age, sex, blood pressure, tobacco smoking, plasma total cholesterol concentration, and haemoglobin A_{1c}. Apart from the

Variable	Controls	Non-insulin dependent diabetic patients			
		Normoalbuminuria	Microalbuminuria	Macroalbuminuria	Diabetic nephropathy
No and sex (M/F)	37/29	159/164	77/74	22/6	38/9
Mean (SD) age (years)	55(7)	59(12)	60(10)	60(11)	58(9)
Mean (SD) blood pressure (mm Hg)	120/70(14/9)	150/82(23/10)	162/86(23/12)	158/87(24/11)	168/91(24/12)
Mean (SD) duration of diabetes (years)		8(7)	10(7)	8(6)	11(6)
Haemoglobin A _{1c} (%)	5.5(4.6-6.4)	7.9(4.7-13.1)	8.9(5.3-13.5)	8.2(5.2-12.1)	8.6(4.6-17.0)
Serum creatinine (μmol/l)	82(34-93)	76(29-194)	81(38-177)	98(155-233)	125(46-740)
Urinary albumin (mg/24 h)	4(1-14)	11(1-30)	90(31-261)	1061(52-5108)*	1729(165-8019)*
% With retinopathy	0	27	47	0	72
% With cardiovascular disease	0	35	44	56	71
Serum von Willebrand factor (U/ml)†	1.30(0.59-2.76)	1.58(0.44-6.16)	1.81(0.53-4.45)	1.89(0.81-5.05)	2.03(0.59-7.53)

*Some macroalbuminuric patients receiving antihypertensive treatment had urinary albumin below 300 mg/24 h.

†Serum concentration of von Willebrand factor was significantly raised in all diabetic groups compared with normal subjects and in all diabetic groups with raised urinary albumin excretion compared with the normoalbuminuric diabetic group (ANOVA) ($P < 0.0001$), followed by unpaired t tests. Diabetic patients: microalbuminuria v normoalbuminuria, $P < 0.0001$; macroalbuminuria ($n=28$) v normoalbuminuria, $P < 0.05$; diabetic nephropathy ($n=47$) v normoalbuminuria, $P < 0.001$. The logarithmically transformed serum von Willebrand factor concentration was used in the analysis.

47 patients with diabetic nephropathy, the normo-albuminuric and microalbuminuric subjects with cardiovascular disease had higher concentrations of von Willebrand factor than similar patients without these complications: median 1.66 (range 0.54-4.04) v 1.53 (0.44-6.16) U/ml ($P < 0.05$), and 1.95 (0.67-4.45) v 1.69 (0.53-3.55) U/ml ($P < 0.05$), respectively, though the 47 patients with diabetic nephropathy did not: 1.90 (0.59-7.53) v 2.30 (1.21-4.56) U/ml (NS). (The macroalbuminuric group ($n=28$) was excluded from this analysis.)

Comment

Our cross sectional study showed a progressive rise in serum concentration of von Willebrand factor with increasing urinary albumin excretion in non-insulin dependent diabetic patients. All diabetic groups had raised concentrations compared with healthy subjects. A lack of correlation between blood glucose concentration and von Willebrand factor has previously been shown. The presence of cardiovascular disease was associated with higher concentrations of von Willebrand factor in non-albuminuric patients. In agreement with previous studies, no association between diabetic retinopathy and von Willebrand factor was found.³

Recent studies have shown that a high serum concentration of von Willebrand factor is an independent predictor of subsequent acute coronary

syndromes in patients with angina pectoris and in survivors of myocardial infarction.⁵ Furthermore, in non-insulin dependent diabetic patients an increased risk of new cardiovascular events is present only in patients with a von Willebrand factor concentration above the median, but not in patients with lower values.²

Our study supports generalised endothelial injury as a potential link between abnormally raised urinary albumin excretion and macroangiopathy in non-insulin dependent diabetic patients. The increased thrombotic activity may also contribute to the cardiovascular events.

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On the naming of the parts

Anatomy is often seen as dry and dull, but with certification in Greek and Latin no longer a prerequisite for admission to medical school the anatomist can live up his teaching with fascinating explanations of the origins of some of the estimated 10 000 new words that the medical student must learn. The hand is a good example. The word hand is taken from the Latin *manus*, which also gave us manipulate and, perhaps aptly, manager. (The African for hand gave us banana.) The digits are named; *pollex* meaning thumb (not Pollux as in Castor and Pollux, as one student rather romantically thought). *Index*, which gives us indicate and the familiar index to books. *Medius*, no romance there. *Annulus* taken as meaning a ring, which is derived from annus, the year, as in annus horribilis. Its more literal meaning is a cycle, which is more appropriate to annus than annulus. *Anulus* can be spelt with one n, in which case it is derived from the Anglo Saxon anus, to sit. Thus anulus fibrosis, anulus femoralis. *Digitus minimi* is functional, but more interesting is *Auricularis* as in the one that you put in your ear.

A *phalanx* is a line of Roman soldiers (Phalanges Marmitum?) and a *trapezium* is a regular four sided figure in geometry. How many students will remember

that a trapezoid is also a four sided figure but with only two parallel sides while the triquetral is a three sided figure? The *scaphoid* is an example of one of the few remaining Greek terms in anatomy. Meaning skiff or boat-like, its Latin equivalent is *navicular*, as in navy. This gives the opportunity to point out that the two bones are not quite equivalent, with the navicular derived from the primitive os centrale whereas the scaphoid is derived from the os centrale fused with the os radiale.

The pisiform is not strictly a carpal bone, but a sesamoid bone in the tendon of flexor carpi ulnaris. Sesamoid is Greek for sesame seed, while pisiform means like a pea. So the pisiform is a sesame seed-like bone that is like a pea. Another Greek term in the hand is *synovium*. A combination of "syn" as in synthetic, made from, and ovium, an egg, the synovial fluid is in fact egg white. —P BURDETT-SMITH is a consultant in accident and emergency medicine in Liverpool

We welcome filler articles of up to 600 words on topics such as *A memorable patient*, *A paper that changed my practice*, *My most unfortunate mistake*, or any other piece conveying instruction, pathos, or humour. If possible the article should be supplied on disk.