Albumin Infusion Increases the Urinary Excretion of Lysozyme in Diabetics

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Dear Sir,

The basic protein lysozyme undergoes reabsorption in the proximal tubules of the kidneys so that none appears in the urine normally. However, diabetics may have lysozymuria, that cannot be related directly to urine protein losses, but it is a feature of diabetic nephropathy [1]. For this reason, we studied urinary lysozyme excretion in 8 Arab patients with diabetic nephropathy and noted a considerable increase in urinary lysozyme excretion following intravenous loading with 500 ml plasma and 20 g of human albumin given over a period of 2 h. The results in table 1 are expressed as the percentage increase in urinary lysozyme excretion in the post-infusion urine samples compared with the basal values in a 12-hour urine collection.

In each case there was a marked increase in urinary lysozyme excretion following intravenous albumin. However, the time of peak excretion and the pattern was variable. Glomerular proteinuria certainly seems to exacerbate lysozymuria. In the rat, it has been noted that infusion of both cationic and anionic proteins will cause competitive inhibition of uptake of other proteins by absorption endocytosis in the proximal tubules [2]. Another consideration is that, with not so good diabetic control, sorbitol accumulation in the tubular cells might impair the reabsorption process [3, 4].

References

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Table 1. Urinary excretion of lysozyme in diabetics

Patients No.

Urea mg/dl

Urine protein g/24h

Basal urine lysozyme µg/mg creatinine

Post-infusion excretion above basal values, %

2-4
4-8
8-20 h

1
50
0.5
0.19
170
90
64
40
2
150
1.5
0.13
30
93
26
15
3
80
1.0
0.15
5
98
38
10
4
120
2.0
12.0
41
58
59
31
5
80
3.5
0.7
200
157
41
0
6
60

1.2
0.14
43
43
0
0
7
60
1.2
0.25
800
400
400
200
80
140
150
120