Urinary Epidermal Growth Factor Excretion in Glomerulonephritic Patients

J.-Y.	Jinn-Yuh	Guh
Y.-H.	Yung-Hsiung	Lai
H.-C.	Hung-Chun	Chen
J.-H.	Juei-Hsiung	Tsai

Department of Internal Medicine, Kaohsiung Medical College, Kaohsiung Taiwan

Jinn-Yuh Guh, MD, Department of Internal Medicine, Kaohsiung Medical College, 100 Shi-Chuan 1st Rd., Kaohsiung (Taiwan)

Dear Sir,

Epidermal growth factor (EGF) is likely synthesized by the thick ascending Henle's loop and distal tubules in the mouse kidneys [1], whereas EGF immunoreactivity was found in proximal tubules [2] and renal pre-pro-EGF mRNA expression was the most abundant among many tissues in humans [3]. The source of human urinary EGF was shown to be the kidneys per se rather than glomerular filtration [4].

Urinary EGF excretion decreased in patients with end-stage renal disease [5], acute renal failure [6] and diabetic nephropathy [7] which had been proposed to be an early marker of tubular dysfunction [7]. Recently, Mat-tilla et al. [8] showed that urinary EGF excretion decreased in patients with glomerulonephritis (GN) who had impaired renal function. But they had only 11 patients whose renal pathology was not described. Furthermore, urinary EGF excretion in GN patients with normal renal function was not shown. Since EGF is mitogenic for many renal cells in vitro [9] and also induces renal growth in vivo [10], it may have a role in proliferative GN. In this regard, EGF immunoreactivity was recently found in human glomerulus, although there was no difference between normal and GN kidneys [11]. In contrast, Goodyer et al. [12] found that urinary EGF-like material increased in pediatric patients with acute Henoch-Schönlein purpura nephritis, although this material was shown to be more like transforming growth factor- α .

Thus, urinary EGF excretion was measured in 25 adult GN patients (aged 38 ± 2.6 SEM years, 15 male, 10 female) who received renal biopsy for various reasons.

Twenty healthy adults (aged 44 ± 3.7 years, 11 male, 9 female) served as the normal controls. A random morning urine was collected for the measurements of urinary EGF (by a human EGF reagent pack for radioimmunoassay, Amersham, UK) and creatinine which was kept at -20°C until assay.

The renal biopsy showed: membranous nephropathy (n = 3), membranoproliferative GN (n = 1), minimal change disease (n = 3), IgA nephropathy (n = 5), diffuse proliferative lupus nephritis (n = 2), focal glomerulosclerosis (n = 5), mesangial proliferative GN (n = 2), crescentic GN (n = 2) and chronic sclerosing GN (n = 2).

Urinary EGF was 41.9 ± 5.9 ng/mg creatinine in the controls. It was marginally decreased to 29 ± 5.4 ng/mg creatinine in the patients with normal renal function (n = 19, NS) and

significantly decreased to 4 ± 1.2 ng/ mg creatinine in the patients with impaired renal function (serum creatinine > 1.5 mg/dl or $133 \mu\text{mol/l}$, $n = 6$, $p < 0.01$). In patients with normal renal function, urinary EGF excretion was similar in patients with (IgA nephropathy in 5 cases, mesangial proliferative GN in 2 cases and diffuse proliferative lupus GN in 1 case) or without ($n = 11$) glomerular cellular proliferation in renal biopsies (27.6 ± 8.3 ng/ mg creatinine vs. 30.3 ± 7.5 ng/mg creatinine, NS). In addition, for the studied patients, urinary EGF excretion did not correlate with either daily urinary protein or renal size by echography. Hence, urinary EGF excretion was not associated with glomerular cellular proliferation in our GN patients. On the other hand, it tended to decrease in GN patients.

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