Significance of Serum Fibrin/Fibrinogen Degradation Products Measured by a Highly Sensitive ELISA Method in Renal Diseases

T.	Tetsuo	Shibata ^a
Y.	Yasuo	Magari ^b
K.	Kamberi	Perparim ^a
R.	Ryokichi	Yasumori ^c
M.	Masaru	Nasu ^a

^aSecond Department of Internal Medicine and ^bDepartment of Laboratory Medicine, Oita Medical University, ^cOitaken Kouseiren Tsurumi Hospital, Oita, Japan

Tetsuo Shibata, MD, Second Department of Internal Medicine, Oita Medical University, Hasama-machi, Oita 879-55 (Japan)

Dear Sir,

In order to clarify the abnormalities of intraglomerular coagulation and fibrinolysis in patients with various renal diseases, urinary or serum fibrin/fibrinogen degradation products (FDP) have been examined by several methods [1,2].

We previously reported the results of measurement of urinary FDP in renal diseases using a newly established sensitive enzyme-linked immunosorbent assay (ELISA) [3]. Up to now there are few reports on abnormalities of fibrinolysis, especially serum FDP, in renal diseases. This has been perhaps related with technical problems that still exist in detecting serum FDP, and especially with low sensitivity of methods used up to now.

Recently, we developed a highly sensitive new method of ELISA for serum FDP using a polyclonal antibody, and utilized it to clarify abnormalities of fibrinolysis in renal diseases. The polyclonal antibody to antihuman fibrinogen was produced by the immunization of rabbits. The horseradish peroxidase was then conjugated to antihuman fibrinogen IgG F(ab')₂ using the modified method of Nakane [4]. Serum FDP was measured in 102 patients with various renal diseases by a two-step sandwich ELISA.

The results were as follows: (1) The sensitivity of method was 0.9 ng/ml. (2) The mean $\pm$ SD of serum FDP in normal subjects was 290 ± 74 ng/ml. (3) The serum FDP levels in chronic glomerulonephritis (CGN), nephrotic syndrome (NS), chronic renal failure (CRF), diabetic nephropathy (DM) and hemodialysis patients (HD) were

S-FDP

(ng/ml)

10000 H

5000

2000-

1000-

DM

(n=10)

HD
(n=30)
Control (n=22)
CRF
(n=15)
NS
(n=12)
CGN
(n=35)
 $P < 0.025$

$P < 0.01$

Fig. 1. Serum FDP levels measured by the new ELISA method in patients with renal diseases and in normal subjects. The shaded zone represents the values which could not be measured by other methods.

KARGER

E-Mail karger@karger.ch Fax + 41 61 306 12 34

© 1996 S. Karger AG, Basel

0028-2766/96/0724-0717\$ 10.00/0

410 ± 232 , 675 ± 420 , 892 ± 69 and 773 ± 524 ng/ml respectively, showing significant differences from normal subjects (fig. 1). (4) The serum FDP levels were slightly higher in patients with CGN and marked proliferation (n = 15) than in those with a mild proliferation (n = 13).

In conclusion, these results suggest that abnormalities of fibrinolysis are involved to a various degree in renal diseases, and the highly sensitive new method of ELISA may be useful in estimating serum FDP in renal diseases.

References

Clarkson AR, MacDonald MK, Petrie JJB, Cash JD, Robson JS: Serum and urine fibrin/fibrinogen degradation products in glomerulo-nephritis. Br Med J 1971 ;iii:447-451.

Shibata T: Studies on intraglomerular coagulation in various renal diseases (in Japanese). Jpn JNephrol 1985;27:1535-1547.

Shibata T, Magari Y, Kamberi P, Sumie A, Ishii T, Tomo T, Sato J, Yasumori R, Nasu M: Significance of urinary fibrin/fibrinogen degradation products in renal diseases measured by a highly sensitive ELISA. Nephron 1995;69: 54-58.

Nakane PK: Preparation and standardization of enzyme-labelled conjugates; in Alan R (ed): Immunoassay in the Clinical Laboratory. New York, Liss, 1979, pp 99-105.

718

Nephron 1996;72:717-718

Shibata/Magari/Perparim/Yasumori/Nasu