Letter to the Editor

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Factor XIII Deficiency in Adult Polycystic Kidney Disease

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Dear Sir, 80 -,

This special polycystic disease [1, 2] is inherited as an autosomal dominant trait with nearly complete pene-trance but variable expressivity and varying degrees of renal insufficiency.

We studied 23 members out of 7 families with this disorder. Clinical criteria for the diagnosis of adult polycystic kidney disease were multiple fluid-filled cysts scattered diffusely throughout the cortex and medulla, he-maturia and intrarenal hemorrhage, and definite history in genetically related family members. Yet, polycystic liver and pancreas were not present in all cases. In 3 cases, we found ruptures of intracranial aneurysms in relatively young patients (3 exitus).

Patients with adult polycystic kidney disease developed renal infections and severe infections after nephrectomy in preparation for transplantation. Furthermore, there were episodes of disturbed wound healing after surgical procedures (chole-cystectomy, Cimino fistula, dental extraction) in 15/23 patients.

It is well known that patients with factor XIII deficiency develop hemorrhagic diathesis (severe forms), pathological scar formations and infections of wounds, and spontaneous abortion [3]. Factor-XIII-deficient patients also have a high frequency of intracranial hemorrhage often resulting in death. In inflammatory bowel disease (colitis ulcerosa, ileitis terminalis), factor XIII deficiencies are also described [4]. Therefore, we investigated factor XIII activities (method of Sigg [5]) and concentrations (Laurell) in 19/23 patients and compared the results with those of 25 patients with end-stage renal failure and 40 normals (fig. 1). In adult polycystic kidney disease, we found significantly ($p < 0.001$) decreased fac-

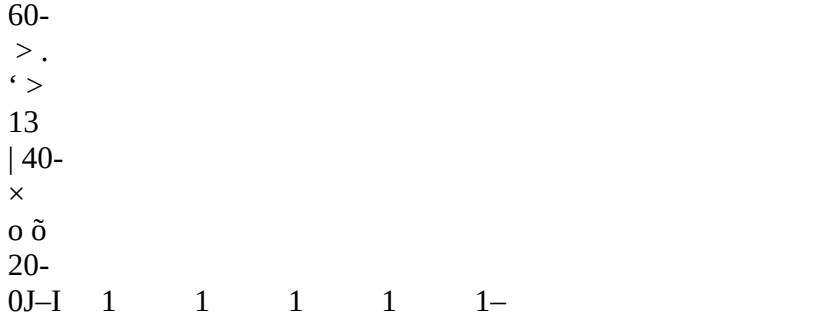

Fig. 1. Factor XIII deficiency in polycystic renal disease.

tor XIII levels (method of Sigg), but factor XIII concentrations were normal (data not shown). In 5/11 patients, we could confirm factor XIII inhibitors [6,7]. This special inhibitor persisted in 1 patient after bilateral nephrectomy (due to severe bleeding). The inhibitor present in renal failure was non-dialysable. The liver synthesis rate in our patients was within the normal range when measured by a laboratory panel. Furthermore, we could exclude excessive imbalances of the fibrinogen/factor XIII ratio by high fibrinogen levels or the presence of disseminated intravascular coagulation in our patients. Thus, increased factor XIII turnover due to multiple cysts in the kidneys and other organs in combination with an impaired synthesis rate under these special circumstances and/or the inhibition of the enzyme (transglutamase) seem likely to be the mechanisms responsible for the

deficiency in factor XIII activity. Surely, we could not completely exclude geographical influences typical for our region. The increased incidence of cerebral aneur-ysms has not been explained yet.

We conclude that the determination of blood coagulation factor XIII has to be taken into consideration in patients with polycystic renal disease. In cases in whom inhibitors and minor wound areas are found, the early therapeutic use of fibrin glues is recommended. If larger wound areas are concerned, substitution therapy (factor XIII concentrates) after laboratory control is required in order to prevent a prethrombotic state.

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