Eosinophilia in Hemodialysis: Implication of the IgE-Basophil System

R.		Perez-Garcia
C.		Gurbindo
M.D.		Gurbindo
F.		Valderrabano

R. Perez-Garcia, C. Gurbindo, MD. Gurbindo, F. Valderrabano, Servicio de Nefrologia, Seccion Alergia, Hospital Provincial de Madrid, IMQ, c/Dr. Esquerdo 46, Madrid 30 (Spain)

Sir,

Bodner et al. [1] have reported that a variable eosino-philia (E) may occur at the end of hemodialysis (HD). After 5 h of dialysis, the eosinophil counts rose significantly in 20 of their 21 patients. All of them had a normal pre-dialysis eosinophil count and normal plasma level of IgE. They proposed that the marked E could not be explained by an IgE-mediated hypersensitivity response to an antigen, because the dialysis procedure did not simultaneously elevate the serum IgE level. We disagree with this interpretation because of the following observations obtained in two groups of patients: (1) patients undergoing HD 3 times/ week for 4-5 h with several dialysis procedures (Hemo-filtration, PAN, Cuprophane Coil, capillary dialyzers) at the Hospital Provincial HD Unit (Madrid), and (2) patients dialyzed with cuprophane capillary dialyzers in a satellite HD unit.

Predialysis count of blood eosinophils were obtained in 85 patients by the counting chamber method. 11 (28%) of the 39 patients dialyzed in the satellite HD unit and 8 (17%) of the 46 patients dialyzed in the hospital showed E (> 500 eosinophils/mm³). In a longitudinal study (3 determinations), the E was constant in 33% and sporadic in 67% of the patients with E. In accordance with previous reports from us [2] and others [3] the incidence of E increased with time on HD. Serum IgE was measured in 7 patients with E and 6 without E. 5 of the 7 patients with E showed a high pre-HD IgE concentration (> 100 μ /ml, Phadebas test). IgE was normal in the 6 patients without E. Similar results are reported by others [4, 5]. Therefore, IgE may be elevated prior to HD in patients with E.

Also 18 patients were studied during HD. Blood eosinophils and basophils were counted at the beginning and after 1, 2 and 4 h of dialysis. (Method: Fuchs-Rosenthal chamber with basophil stain of Moore and James [6] and eosinophil stain by eosin and phenol.) 8 of the patients had E and 10

did not. In 6 of the patients with E the eosinophils rose from 570 to 1,733, 1,870 and 2,300 while the basophil count declined from 28 to 18, 20 and 8 (a fall of 71 % after 4 h HD). In 6 patients without E before HD, the eosinophil count also rose from 222 to 987, 2,112 and 2,097. In only 2 of these patients was the basophil count lowered (60%) at the end of HD. E is thus a frequent observation post-HD, but a fall in basophils occurs mostly in patients with E before HD.

In the patients dialyzed in the satellite unit, E was frequently associated with an allergic state (rhinitis, asthma, pruritus, urticaria, etc.). In 3 of these patients an anaphyl-actic shock occurred within minutes after the onset of dialysis. Most of these reactions were triggered by the use of a brand of capillary dialyzer. In 3 patients a specific degranulation of basophils was produced in vitro by interacting the patients' blood with the washout fluid (NaCl 0.9%, pH 7.3) of the capillary dialyzer. No degranulation was observed with basophils obtained from 2 control patients nor 2 nonuremic subjects. This suggests that, at least in some patients, an IgE-basophil mediated E occurs following exposition to antigens released by the dialysis material. Therefore, we suggest that immediate hypersensitivity (IgE-basophil system) may be a causative mechanism of E in some patients.

References

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