More about Anaphylactoid Reactions in Patients Dialyzed with AN69 Filter and on Angiotensin Converting Enzyme Inhibitors Treatment

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Dear Sir,

An interesting relationship between anaphylactoid reactions and the dialysis with an AN69 filter in patients treated with angiotensin-converting-enzyme inhibitors (ACE) has recently been reported [1, 2]. Although the mechanism argued to explain this reaction is quite exciting, it is not fully confirmed. We wish to present 2 cases of severe anaphylactoid reactions with this association, where a sensitization to ethylene oxide (ETO) was wrought to be the main cause and captopril a possible precipitating agent.

Case 1

A 60-year-old patient on regular hemodialysis for 7 years, had been dialyzed with a hollow-fiber AN69 filter (Fyltral 16, Hospal) and bicarbonate dialyzate for 8 months without problems. Because of an intermittent eosinophilia while the patient was on Cuprophane dialysis, a RAST-ETO was performed with a positive result, although, as the patient was asymptomatic, no special measures were taken except for a 2-l normal saline rinsing procedure before each dialysis. After 3 months on erythropoietin therapy, the patient developed a mild to moderate arterial hypertension and captopril, 50 mg/day, was prescribed. At the beginning of the next dialysis after the patient had started the captopril treatment, a severe anaphylactoid reaction occurred with itching, angioedema and hypotension. After the habitual measures (stop the dialysis, corticosteroids, antihistamines and adrenaline), he recovered and was again dialyzed with a new AN69 dialyzer (Fyltral 16) after an exhaustive rinsing with 3 l of normal saline, without problems. No rinsing protocol

violation in the dialysis with anaphylactoid reaction was confirmed. The next 4 dialyses were uneventful, rinsing the AN69 filter with 3 l of normal saline immediately before the beginning of the dialysis and while the patient continued the captopril therapy. A high positive titer of RAST-ETO persuaded us to switch the AN69 dialyzer to γ -ray sterilized cellulose acetate. With this filter, the RAST-ETO became negative 6 months later.

Case 2

A 60-year-old man had been on regular hemodialysis for 3 years, and dialysing with an AN69 hollow-fiber filter (Fyltral 12, Hospal) for 15 months on acetate free buffer (AFB) dialysis. He had no antecedents of allergic reactions, but a positive RAST-ETO was recorded in a routine research about the sensitization to this substance in our unit 10 months ago. Due to a moderate hypertension, captopril therapy at a dose of 50 mg/day was prescribed. One week later on this therapy, a severe anaphylactoid reaction occurred in the first minute after the beginning of the dialysis and was sequentially characterized by itching, hives, glottis edema and hypotension. After the habitual measures, the patient was dialyzed again with a Fyltral 12 rinsed with 31 of normal saline without event, and with this rinsing protocol there has not been any other reaction in the next 15 dialyses up to the time of this study, despite the patient continued taking captopril. A RAST-ETO analyzed after the anaphylactoid reaction was negative. The emergence of anaphylactoid reactions in patients dialysed with an AN69 filter and receiving ACE inhibitors has lately been

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reported [1,2]. In these patients, an ETO sensi-tization was reasonably ruled out and the authors have hypothesized that a potential bradykinin generation by AN69 membrane together with the blockage of the degradation of these bradykinins by ACE inhibitors may be the cause of the reactions [1,2].

In the cases described here, a severe ana-phylactoid reaction occurred after captopril was introduced in the treatment, but an exhaustively rinsed AN69 membrane avoided further reactions. This sequence of events may suggest that the drug acted as a precipitating agent on the ground of a sensitization to ETO (case 1) or another unknown substance (case 2).

As has been demonstrated by Siraganian and Hook [3], anaphylatoxin C5a is an adjuvant to IgE in the histamine release from the basophils in type I hypersensitivity reactions, and this may be of great importance in the anaphylactoid reactions provoked by cellulose membranes. The questions are: is the participation of an adjuvant necessary to trigger a severe anaphylactoid reaction related to dialysis?; and since the polyacrylonitrile membrane does not generate complement fractions, could ACE inhibitor act as an adjuvant, blocking the bradykinin degradation, in a priorily sensitized patient, whatever it is caused, or would such sensitization not be necessary?

While these questions remain to be answered, we suggest that much more attention should be paid to the rinsing protocol of the AN69 hollow-fiber dialyzer.

References

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