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Deficiency of Eosinophil Peroxidase Detected by Automated Cytochemistry

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Eosinophil and neutrophil/monocyte peroxidases differ in biochemical [1], antigenic [2] and functional characteristics [3] and in genetic control. Individuals with inherited deficiency of neutrophil/monocyte peroxidase [4, 5] have normal levels of eosinophil peroxidase. Eosinophil peroxidase deficiency with normal levels of the neutrophil enzyme has seldom been reported [6]. We report a patient in whom a selective deficiency of eosinophil peroxidase was detected by flow cytochemistry (Technicon H-6000).

A 62-year-old woman was diagnosed as having toxic epidemic syndrome (TES) in June, 1981. Leukocyte count was $11.7 \times 10^9/l$ with a 10% eosinophils. In November 1983, when she was seen at our hospital, the H-6000 report of her peripheral blood showed 6.79×10^9 leukocytes/l with 37.6% neutrophils, 26.6% lymphocytes, 33.4% monocytes, 0.3% eosinophils, 1.5% basophils and 0.6% large unstained cells. However, the peripheral smear revealed only 8% monocytes and 30% eosinophils. Two years later the same abnormality was still present. Her eosinophils gave a negative reaction for peroxidase using benzidine di-hydrochloride [7] and for Sudan black B. Neutrophils and monocytes reacted normally to both techniques. The patient refused further testing and no family studies could be performed.

We interpret those results as a congenital or acquired partial deficiency of eosinophil peroxidase. The abnormal eosinophils are read as 'monocytes' by the H-6000 (large cells with little peroxidase). Some peroxidase must be reacting in the eosinophils although there is none detectable by optical cytochemistry using benzidine dihydrochloride.

Eosinophilia was a marker for TES [8]. The eosinophils in this disease are similar in optical morphology to those found in our patient. However, no cytochemical abnormalities have been reported in TES. Only 0.17% of patients with TES had more than 1×10^9 eo-sinophils/l 4 years after diagnosis.

Neutrophil peroxidase deficiency has been increasingly recognised by automated flow cytochemistry [4, 5]. Optical screening of peripheral smears of patients with low numbers of eosinophils and mildly elevated numbers of monocytes and/or large unstained cells by flow cytochemistry may reveal other cases of eosinophil peroxidase deficiency.

References

Migler, R.; DeChatelet, R.: Human eosinophilic peroxidase: biochemical characterization. Biochem. Med. 19: 16-26(1978).

Salmon, S.E.; Cline, M.J.; Schultz, J.; Lehrer, R.I.: Myeloper-oxidase deficiency: immunologic study of a genetic leukocyte defect. *New Engl. J. Med.* 282: 250–253 (1970).

Migler, R.; DeChatelet, L.R.; Bass, D.A.: Human eosinophilic peroxidase: role in bactericidal activity. *Blood* 51: 445–456 (1978).

Parry, M.F.; Root, R.K.; Metcalf, J.A.; Delaney, K.K.; Kaplow, L.S.; Richar, W.J.: Myeloperoxidase deficiency: prevalence and clinical significance. *Ann. intern. Med.* 95: 293–301 (1981).

Kitahara, M.; Eyre, H.J.; Simonian, Y.; Atkin, C.L.; Hasstedt, S.J.: Hereditary myeloperoxidase deficiency. *Blood* 57: 888–893(1981).

Presentey, B.: Cytochemical characterization of eosinophils with respect to a newly discovered anomaly. *Am. J. clin. Path.* 57: 451–462(1969).

Kaplow, L.S.: Simplified myeloperoxidase stain using benzidine dihydrochloride. *Blood* 26: 215(1965).

Toxic Epidemic Syndrome Study Group: Toxic epidemic syndrome, Spain 1981. *Lancet* ii: 697–702(1982).