

Usefulness of automatic detection of fragmented red cells using a hematology analyzer for diagnosis of thrombotic microangiopathy

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We previously reported an automatic method for quantitative analysis of schistocytes or fragmented red cells using an automatic hematology analyzer, XE-2100. In the study reported here, we evaluated the accuracy of this detection method in patients with thrombotic microangiopathy (TMA). A follow-up study was performed on 14 patients with two types of TMA, thrombotic thrombocytopenic purpura or hemolytic uremic syndrome. Schistocyte percent was evaluated both with an automatic counter and by means of microscopic observation. Total activity and isoenzyme pattern of lactate dehydrogenase (LD) were also determined. In these patients, schistocyte percent determined by automatic counting correlated highly with that determined by manual counting under microscopic observation ($r = 0.852$, $P < 0.0001$). Schistocyte percent was shown to correlate significantly with isoenzyme fractions 1 and 2 of LD ($r = 0.732$, $P < 0.02$), reflecting hemolysis. Nine of 11 patients tested had high concentrations of LD isoenzyme five without distinct liver damage, and schistocyte percent did not relate to fraction 5 of LD. Automatic detection of schistocyte percent using a hematology analyzer was useful for an accurate diagnosis and follow-up of thrombotic microangiopathy. The origin of LD fraction 5 remains to be determined