Thrombotic Manifestations in Plasminogen Deficiency and in Plasminogen Abnormalities

Dear Sirs,

We have read with interest the paper by Hach-Wunderle et al. (6) on plasminogen deficiency. A few comments seem warrented. In the introduction, third paragraph, it is stated that "few reports on plasminogen deficiency and its relationship to thrombotic disease is unclear". This is untenable. A relationship between plasminogen deficiency and a thrombotic tendency has been firmly established. The authors in fact failed to quote another family which was recently reported in a major journal (2). The proposita of this family was a 55 year female with a life long thrombotic tendency (2). This included multiple vein thrombosis of splanchnic and peripheral veins. The only abnormality found was a plasminogen activity and antigen level of about 50% of normal. Such thrombotic tendency appeared to us even more severe than that usually seen in AT III, protein C or protein S deficiencies. In agreement with this interpretation is the fact that plasminogen abnormalities are also associated with thrombotic manifestation (1). Since the report, the proposita showed a minor superficial thrombophlebitis of her right leg. At the present time the patient is doing fairly well and is always on coumarin therapy. A daughter of the proposita showed a similar defect but probably due to the young age, she is so far asymptomatic. Even in the case presented by Ten Cate et al., in abstract form, the relationship was well demonstrated (8). When one deals with rare coagulation disorders, one must be sure that all papers on the subject are quoted lest data which are not really new may appear so to the reader. At the time the paper in question was submitted to Thrombosis and Haemostasis (June 1987) the paper missing from the references had already been published for over a year. There is nothing new in the paper in question but just a confirmation of previous observations. We are also surprised to see that the reviewer failed to bring up this point. It is surprising that the authors quoted two abstracts (7, 8) and failed to quote a recent full-length paper on the subject (2).

Heterozygous plasminogen deficiency may be accompained by a severe thrombotic tendency. Needless to say that this does not mean that every patient is symptomatic. This is not the case for antithrombin III, protein C or protein S deficiencies. Probably, the exact incidence of thrombotic manifestations in patients with heterozygous plasminogen deficiency remains to be determined. In fact it is likely that asymptomatic patients might go unreported thereby introducing a bias. It is also interesting to note that plasminogen "true" deficiency appears to be rarer than plasminogen abnormalities (1). This appear to be exceptional since in almost all other cases involving clotting proteins the opposite is true. For example in the case of AT III defects, the ratio between AT III deficiency and AT III abnormalities is about 10 to 1. This may indicate that the genes involved in the synthesis of plasminogen are more frequently altered than absent. The other conditions in which there seem to be an equal number of "dys" forms and of "hypo" forms are prothrombin and factor X defects (5).

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References

1 Aoki N. Genetic abnormalities of the fibrinolytic system. Semin Thromb Haemostas 1984; 10: 42–50.
2 Girolami A, Marafioti F, Rubertelli M, Cappellato M G. Congenital heterozygous plasminogen deficiency associated with severe thrombotic tendency. Acta Haematol 1986; 75: 54–7.
3 Girolami A, Cappellato M G, Vicarioto M, Marafiotti F, Traverso R, Vergolani A, Boeri G. Antithrombin III deficiency: a report of 14 cases belonging to three different kindreds. Folia Haematol 1985; 4: 594–606.
4 Girolami A. A tentative classification of AT III congenital abnormalities. Folia Haematol 1987; 114: 661–9.
5 Girolami A, De Marco L, Dal Bo Zanon R, Patrassi G, Cappellato M G. Rarer quantitative and qualitative abnormalities of coagulation. Clinics Haematol 1985; 14: 385–411.
6 Hach-Wunderle V, Scharrer I, Lottenberg R. Congenital deficiency of plasminogen and its relationship to venous thrombosis. Thromb Haemostas 1988; 59: 277–80.
7 Hasegawa D K, Tyler B J, Nilson J R. Thrombotic disease in three families with inherited plasminogen deficiency. Blood, suppl 1, 1982; 60: 213.
8 Ten Cate J W, Peters M, Büller H. Isolated plasminogen deficiency in a patient with recurrent thromboembolic manifestations. Thromb Haemostas 1983; 50: 59 (Abstr).

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