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Preventive effects of Ticlopidine on the incidence of late A-V fistula thrombosis complications in haemodialyses patients

Development of dialysis therapy which Poland experienced throughout the last decade caused a considerable increase in the number of patients receiving haemodialyses as a successful kidney substitution therapy. Extended indications for the treatment now including diabetic nephropathy and elder patients as well as longer life span of patients undergoing the therapy account for the increase in the number of A-V fistula complications. Fistula thrombosis is definitely the most common and dangerous complication leading to vascular access failure (1,3,10,11). Uraemia patients demonstrate different plasmatic and platelet haemostasia disorders which may provoke thrombosis complications. In the literature available you can find very few papers concerning the influence of antiaggregative drugs on platelet activity in patients with freshly created A-V fistula. The authors of those papers studied just one of the antiplatenet drugs for a short period of time, ignoring the problem of thrombosis complications which are likely to occur when the fistula is used for haemodialysis purposes.

The aim of this paper is to answer the question whether preventive administration of Ticlopidine results in reducing the number of various thrombotic complications in A-V fistula made for haemodialysis purposes.

MATERIAL AND METHODS

The study was performed in 60 patients with terminal renal failure who underwent intermittent haemodialyses after A-V fistula had been surgically created. The follow-up was 27 months. 30 patients were preventively given 125mg of Ticlopidine, twice daily. The group whose mean age was 51±9.8 (21–63 years) consisted of 18 men and 12 women. The reasons leading to chronic renal insufficiency were of different etiology. The patients were subjected to haemodialyses procedures 3 times a week for 4–4.5h and received standard bicarbonate buffer and micromolecular or non-fractionate heparin. Blood flow rate was 250ml/min. Fresenius dialysers with polysurfone membrane were used. 22 patients received hypotensive drugs and 23 patients received erythropoietin. One patient had kidney implanted after 21 months, the fistula functioned normally.

The control group consisted of 30 patients who were not administered Ticlopidine after surgical creation of fistula and were subjected to repeated haemodialyses. The group consisted of 12 women and 18 men with the mean age of 50+/- 11 (21–65 years). The etiology of terminal renal failure was different too. Haemodialyses were the same as in the study group. 19 patients received hypotensive drugs and 22 patients received erythropoietin. One patient with properly functioning fistula died of heart attack in the 24th month of the follow-up.

RESULTS

Only two out of 30 intermittent haemodialisis patients receiving Ticlopidine developed thrombotic complications in dialysis fistulas. In one diabetic nephropathy patient complications occurred in the 22nd month of intermittent dialysis therapy. The other hypertension nephropathy patient developed the same complications in the 26th month. In the control group, 5 out of 30 patients who did not received Ticlopidine had fistula thrombosis complications. In two patients they occurred 16 and 19 months after the commencement of treatment and one patient developed them in 12th month, the other two glomerulonephritis patients had the complications after 21 and 25 months of treatment.

The follow-up lasted 27 months both in the study and control groups. Throughout that time no Ticlopidine-related complications were observed.

DISCUSSION

Numerous authors confirm the positive effect of Ticlopidine on early thrombosis complications in A-V fistulas (5,8). The researchers evaluated mainly the influence of Ticlopidine on the occurrence of early thrombosis complications in surgically created fistula. I focused my own studies on Ticlopidine activity in relation to late thrombosis complications. The follow-up lasted for 27 months, which according to the available literature was the longest follow-up period in preventive Ticlopidine therapy. In the study group only two patients developed thrombosis, whereas in the control group (not receiving Ticlopidine) the number amounted to 5. Drug tolerance was good, with no side effects as described in the literature (2,14). Thus it may be concluded that Ticlopidine, although reducing the incidence of thrombosis complications, does not entirely eliminate the problem. It results from the fact that various additional factors influence clotting and platelet activation. This is the case with hyperhomocysteinemia frequently occurring in chronic renal failure or haemodialysis patients (4,9). Other factors which caused fistula thrombosis are as follows: poor vascular condition (6,7), incorrect fistula use, drops in arterial pressure and central and peripheral vein stenosis (12) and they may cause even 87% of late fistula thrombosis (13).

CONCLUSIONS

1. Preventive administration of Ticlopidine significantly reduced the number of late thrombosis complications in dialysis fistulas.
2. During 27 months of preventive treatment with Ticlopidine no drug-related side effects were observed.

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SUMMARY

Development of dialysis therapy over the last decade caused considerable increase in the number of patients receiving haemodialyses as kidney substitution therapy. However, a wider use resulted in greater number of A-V fistula complications. Uraemia patients were reported to develop plasmatic and platelet haemostasis disorders which provoke dialysis fistula thrombosis. The aim of the paper was to answer how Ticlopidine affected decrease in the number of late thrombosis complications in freshly created A-V fistula. The study included 60 patients, 30 of whom were given Ticlopidine (125mg twice every 24h). The other 30 patients constituted the control group and did not received the drug. The follow-up lasted 27 months. It was concluded that preventive administration of Ticlopidine significantly reduces the extent of late thrombosis complications.

Wpływ profilaktycznego zastosowania tiklopidyny na występowanie późnych powikłań zakrzepowych w wytworzonych przetokach A-V dla celów hemodializy

Rozwój dializoterapii w ostatnim dziesięcioleciu przyczynił się do znacznego zwiększenia liczby chorych leczonych hemodializami. Rozszerzenie wskazań do tego typu leczenia spowodowało wzrost liczby powikłań w użytkowanych przetokach tętniczo-żylnych. U chorych z mocznicą opisywano występowanie różnych powikłań zaburzeń hemostazy osoczowej i płytkowej, które sprzyjają powstawaniu zakrzepicy przetoki dializacyjnej. Celem pracy było uzyskanie odpowiedzi na pytanie: czy profilaktyczne zastosowanie tiklopidyny przyczynia się do zmniejszenia liczby późnych powikłań zakrzepowych w świeżo wytworzonej przetoce tętniczo-żylnej. Obserwacją objęto 60 chorych. 30 pacjentom podawano tiklopidynę w dawce 125 μg dwa razy na dobę. Dalszych 30 chorych stanowiło grupę kontrolną i nie otrzymywało leku. Okres obserwacji wynosił 27 miesięcy. W przeprowadzonych badaniach stwierdzono, że profilaktyczne stosowanie tiklopidyny w istotny sposób wpływa na zmniejszenie ilości późnych powikłań zakrzepowych w wytworzonych przetokach.