The Renu Device: A New System for Endovascular Rescue of Stent Grafts That Have Migrated, or Other Proximal Fixation Problems

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NOTES

Prostaglandin E1 (PGE1) has a potent vasodilation effect and other actions not completely elucidated yet such as inhibition of platelet and leucocyte activation, deaggregation of platelet and leucocyte aggregates, induction of angiogenesis, and an ill-defined action of cell membrane stabilization. The potent vasodilatation promoting increased flow can eventually sweep and separate platelets and leukcocytes aggregates in a mechanical way. In 1982 after successfully treating a patient with Buerger's disease with intra-arterial injection of PGE1, we initiated a program to treat patients suffering atheromatous embolization using the same methodology. The first report of intra-arterial injection of PGE1 was made in Germany describing a case report of Buerger's disease. Intra-arterial injection of PGE1 is much more effective than intravenous injection since 90% of the drug is cleared during the first passage through the lungs. Secondary effects of intra-arterial (I-A) injection of PGE1 is limited to pain, hypotension, and edema. I-A injection can be performed under local anesthesia providing that the infusion is made using a diluted solution and over several hours of infusion. If a more rapid effect of the drug is needed, the patient is sedated and potent analgesics administered. A large dose can be administered with the precaution of controlling the blood pressure very meticulously. The half-life of PGE1 is very short, and hypotension is easily reversed by waiting a few seconds and giving a bolus of saline or a small dose of Fenyl-Nephrine. We prefer the latter modality. Results in terms of relief of pain and temperature increase of the skin are evident from the first injection. Need for secondary injection was established in almost all patients. The exemption is the patient with a very discrete atheromatous embolization who can be treated effectively with only one injection.

The dose we used varied between 200 and 1,500 µg per session. Initially the distal limb suffers a paradoxical distal ischemia owing to the steal phenomenon that occurs after dilatation of the proximal vasculature. During the past 18 months, 10 patients affected by atheromatous microembolization were treated at the Barnes Hospital in St Louis. Six patients had compromise of the upper extremities and the rest of the lower extremities. Treatment was performed percutaneously in all patients. The femoral artery was cannulated in all of them. No complications were recorded.

All patients experienced a great relief of their pain after the first injection. Most of the patients were considered for amputation of the hand or feet before treatment was established. Causes of distal embolization were abdominal aortic aneurysm (AAA) (1 patient), iliac artery ulcer (1), common femoral artery stenosis/ulcer (1), PFO (3); subclavian stenosis/ulcer (1), and cause not established (3). Patients with PFO were anticoagulated with Coumadin. The patients with an AAA were treated with an endograft; an iliac and subclavian stenosis/ulcer was treated with stents. The dramatic change of the limb after PGE1 injection prompted us to report this limb-_salvaging method, which is well tolerated and without complications. As PGE1 induces abortion, pregnancy should be ruled out before considering this treatment.