Fibrin glue-antibiotic suspension in the prevention of prosthetic graft infection.

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Abstract:

The following study was done to assess whether fibrin glue-antibiotic suspension (FGAS) can prevent infection of a PTFE vascular graft in a contaminated wound. Method: FGAS was made by combining cryoprecipitate with a mixture of bovine thrombin, aminocaproic acid, and tobramycin (5 mg/cc thrombus). Antibiotic activity was documented by in vitro kinetics which revealed initial elutions to be >8,000 mugm/cc and elutions at 4 days to be >2 mcg/cc. Twelve dogs had a 1-cm section of infrarenal aorta replaced with a PTFE graft that had been bathed in a 2-cc solution of E. coli 3 x 10⁸ CFU/ml and S. aureus 3 x 10⁸ CFU/ml. Both organisms were sensitive to tobramycin and cefonicid. Dogs were divided into three groups of four. Group I had a contaminated PTFE graft placed and no further therapy. Group II had a contaminated PTFE graft placed and sealed with fibrin glue. Group III had a contaminated PTFE graft placed and sealed with FGAS. All three groups received daily IV cefonicid. Results: Group I: Four of four dogs were reoperated on the fourth day for suspected sepsis and all four had pseudoaneurysms (one ruptured). Three of four were culture positive for S. aureus and two of four positive for E. coli. Group II: Four of four died of anastomotic disruption by the third day. Four of four were culture positive for S. aureus and E. coli. Group III: All four dogs survived and were sacrificed on Day 17: all anastomoses were normal. Animal survival was significantly associated with the treatment given ($p = 0.0025$). Three of four tissue cultures of the grafts were weakly positive for S. aureus and one of four for E. coli and Pseudomonas. Serum tobramycin levels were negligible at 12, 24, 72, and 96 hours. Conclusions: The data show that FGAS was associated with a reduction in vascular graft

infection and pseudoaneurysm formation after exposure to a standardized bacterial inoculum. Whether complete eradication of all organisms can be achieved with higher doses of tobramycin is as yet undetermined.