

Pharmacokinetics of Intravitreal Bevacizumab (Avastin)

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PURPOSE

To describe the pharmacokinetics of 1.25 mg of intravitreal bevacizumab (avastin).

METHODS

1.25 mg (0.05cc) of bevacizumab was injected into the vitreous cavity of the right eye of each of 20 Dutch-belted rabbits (weighing 1.6-2.0 kg). At days 1, 3, 8, 15 and 29 days, a blood sample was taken, and the aqueous humor was aspirated and immediately frozen. The rabbits were sacrificed, both eyes were enucleated and immediately frozen, and the vitreous was then dissected whole from the eye. Bevacizumab concentrations were then measured in the serum, aqueous and vitreous, by an immunoassay.

RESULTS

Half-life values were shorter than predicted based on molecular weight. The half-life was 4.32 days in the vitreous, 4.88 days in the aqueous humor, and 6.86 days in the serum. The time to reach maximum concentration was 1 day in the vitreous (400 ug/ml), 3 days in the aqueous humor (37.7 ug/ml) and 8 days in the serum (2.22 ug/ml). Systemic exposure to bevacizumab was 1.7% of vitreous exposure.

CONCLUSION

In a phakic, non-vitreotomized eye of a Dutch belted rabbit, intravitreal bevacizumab would be expected to last approximately 22 days. Mean residence times (time to clear > 69% of drug) in vitreous, aqueous and serum were 6, 7, and 13 days. Serum absorption was negligible, at 1.7% of vitreous exposure.