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THE ESTABLISHMENT OF THE RABBIT MODEL OF CHRONIC RETINAL NEOVASCULARIZATION

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Background : Fundus neovascular diseases have become an important cause of reduced vision, and a variety of secondary eye diseases may appear later on, leading to great distress for the patient. However, current animal models of fundus neovascular diseases tend to have weaknesses such as short neovascularization duration, complicated modeling methods, high cost, and low modeling rate. It is also difficult to simulate the long-term existence and leakage of clinical fundus neovascularization. Therefore, it is of great significance for the evaluation of anti-neovascular ophthalmic drugs to develop a long-term animal model of fundus neovascularization.

Purpose: To establish a long-term rabbit model of chronic retinal neovascularization (RNV) for the development and screening of long-lasting antineovascular drugs.

Method: Inject a certain dose of DL- α -AAA through the vitreous body cavity to induce retinal neovascularization in New Zealand rabbits and Dutch rabbits. Observe the RNV shape with no-red light under-eye images and colorful images of the German Heidelberg Spectralis HRA+OCT system. Observe the degree of RNV fluorescence leakage through fluorescein angiography images, understand the development of the model, and validate the model with the anti-VEGF drug Aflibercept Eylea®.

Result: Injecting a certain dose of DL- α -AAA through the vitreous cavity can successfully induce RNV in New Zealand rabbits and Dutch rabbits. The modeing cycle is 8-12 weeks and the modeling rate is around 75%. In addition, RNV can remain stable for 26 weeks or more. 1 week after the intravitreal injection of aflibercept, RNV of Dutch rabbits is significantly inhibited (Figure 2B). 12 weeks after the injection, the efficacy of the drug weakened, and RNV iss restored (Figure 2C).

Conclusion: Injecting a certain dose of DL- α - AAA through the vitreous cavity can successfully induce RNV in New Zealand rabbits and Dutch rabbits, stable for 26 weeks or more. After the anti-neovascular drug Eylea® is administered, rabbit RNV is significantly inhibited. As the efficacy of the drug weakens, RNV gradually recovers, indicating that this model is suitable for the pharmacodynamic evaluation of anti-neovascular drugs, especially long-acting products.

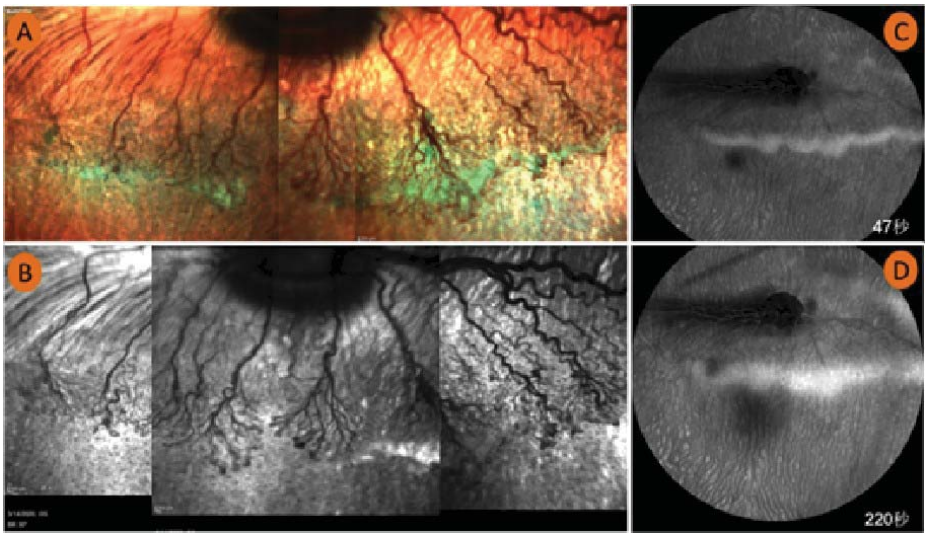

Figure 1 Illustration of typical New Zealand rabbit retinal neovascularization and the rluorescence leakage in the corresponding area – 38 weeks after modeling (A. No-red-light image; B. Coloful image; C. Early image of fundus fluorescein angiography; D. Early image of fundus fluorescein angiography)

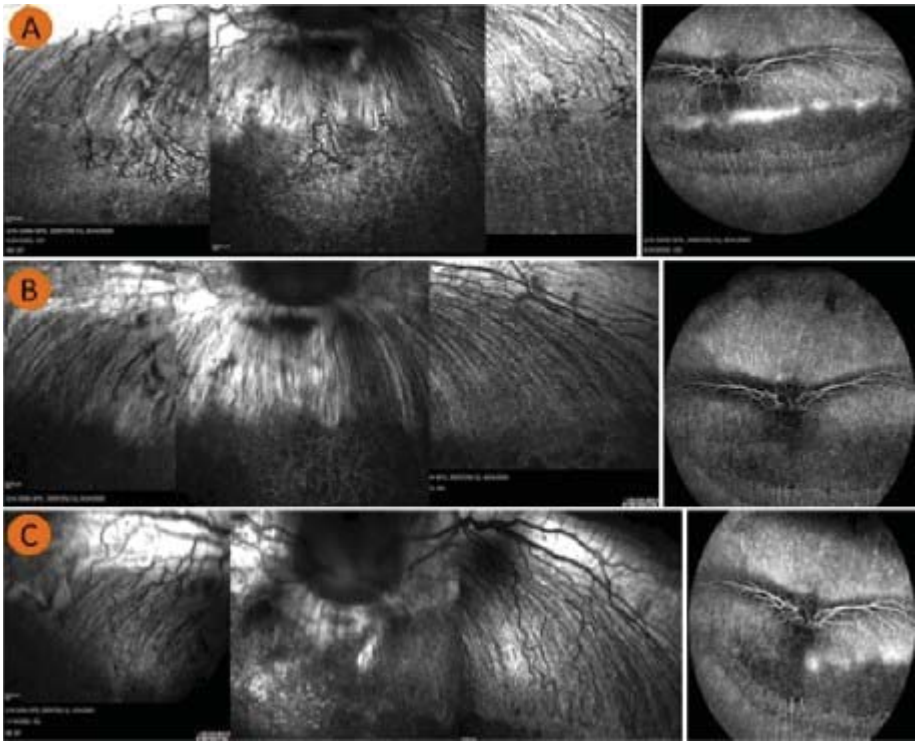

Figure 2 Changes of retinal neovascularization in Dutch rabbits before and after the administration of Aflibercept (A. Illustration of typical Dutch rabbit retinal neovascularization; B. Illustration of typical 1 week after administering Aflibercept; C. Illustration of typical 12 weeks after Aflibercept; In each row, left: no-redlight image, right: late image of fundus fluorescein angiography)