

AI Estimation of the Wall Fragility Site of Cerebral Aneurysm Based on 4D-CTA and 4D-MRA Medical Images and Clinical Application of Head Models

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Project Outline

【Target Disease】Cerebral aneurysm

【 Patent Information 】 Domestic applications filed (4), PCT applications (4 by 2024)

【 Technology Features 】 The principal investigator has the technology to "estimate the vulnerable area of a cerebral aneurysm wall using AI" without craniotomy by using 4D-CTA and 4D-MRA image data (see Figs. 2 and 3). Furthermore, this technology can be used to create a silicone aneurysm with AI-estimated information. Currently, we are aiming to establish an inexpensive protocol to create a combined model of "brain + all cerebral blood vessels + skull + silicon aneurysm with AI-estimated information" by using this technology. In this process, the company is emphasizing that the "brain" and "cerebral blood vessels" should "precisely simulate the human body. Since the silicone aneurysm is made in a removable fashion, the patient can easily understand the progression of the aneurysm by holding the silicone aneurysm in his or her hand.



Fig1 : "Head models" and "cerebrovascular models."

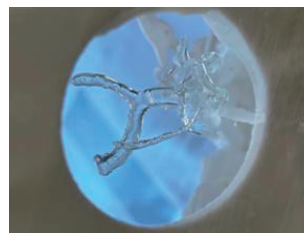


Fig 2 : Silicon aneurysm visible through skull opening



Fig 3 : Silicon cerebral aneurysm

【Efficacy】 Physicians can perform a "preoperative test" using the model developed in this research and development project. Patients can easily understand the degree of progression of cerebral aneurysms by holding the model in their hands. In addition, the following benefits can be expected.

【Marketability】It is estimated that there are 3.5 million brain artery holders in Japan alone. We can expect to expand the project to brain dog recipients in the world.

【Challenges in Development 】Selection of inexpensive, cost-cutting materials for molding and development of protocols for high-precision molding.

- Target disease: Cerebral aneurysm
- Patent information: Domestic applications filed (4), PCT applications (4 by 2024)
- Characteristics of the technology: Silicon model of the head combining all cerebral blood vessels including cerebral aneurysms with the brain
- Marketability, challenges in development: Selection of cost-cutting, inexpensive modeling materials and development of protocols for highly precise modeling
- Desired corporate collaboration: Joint development