

Tumor necrosis by Trisacryl Gelatin Microspheres Embolization in Meningioma

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ABSTRACT

Background and Purpose: Trisacryl gelatin microspheres are a non-absorbable embolic agent. This study evaluates the efficacy of the embolization against en plaque meningioma. **Patient and Methods:** An 87-year-old man with the left en plaque meningioma was performed the superselective embolization of meningioma with trisacryl gelatin microspheres (150–300 micrometer particle). Radiographic changing was assessed by gadolinium-enhanced magnetic resonance imaging. **Results:** The gadolinium stain in tumor was decreased by trisacryl gelatin microspheres. Necrotic change by embolization distributed in the occluded feeder area. **Conclusion:** Trisacryl gelatin microspheres are effective in the embolization of meningioma, causing intratumor necrosis.

Key words: Trisacryl gelatin microspheres, meningioma, embolization”

INTRODUCTION

Trisacryl gelatin microspheres (Embospheres: Merit medical systems) are a hydrophilic non-absorbable collagen-coated embolic agent.^[1,2] This particle is useful to the pre-operative embolization of meningioma.^[1-3] Making tumor soft and reducing intraoperative bleeding are the advantage of feeder occlusion.^[4] Although these effects are speculated by the results of tumor necrosis, there are little radiographic evidences. This study demonstrated the necrotic change of trisacryl gelatin microspheres embolization against meningioma feeders.

PATIENT AND METHODS

An 87-year-old man had aspiration pneumonitis and conscious level down with a moderate right hemiplegia. Magnetic resonance imaging of head demonstrated left en plaque meningioma with mass effect [Figure 1 a-c]. Tumor mass was evenly stained by gadolinium. Due to surgical resection was highly invasive, the superselective feeder embolization with trisacryl gelatin microspheres (150–300 micrometer particle) was performed. Endovascular therapy

was carried out through the right femoral artery approach. The left external carotid artery was selected by 6-French Envoy STR (Codman and Shurtleff)/4-French OK2M (Toray industries)/0.035 inch guidewire system. Parent arteries of tumor feeder were selected by Excelsior SL-10 STR (Boston Scientific)/ASAHI CHIKAI 0.014 inch (ASAHI Intecc) system. Trisacryl gelatin microspheres were injected from the left middle meningeal artery and middle deep temporal artery. The left superficial temporal artery (STA) was occluded by a HydroSoft 10 Helical 2 mm × 4 cm, two HydroSoft 10 Helical 3 mm × 8 cm, and two HydroSoft 10 Helical 2 mm × 8 cm (TERUMO). Tumor feeders from STA were packed by trisacryl gelatin microspheres injection from proximal STA. Tumor stain from external carotid artery system was almost diminished [Figure 2b]. Feeding artery from the left middle cerebral artery was untreated (data not shown). 1-week post-embolization, gadolinium staining area reduced according to the feeder occlusion region [Figure 1d-f].

RESULTS AND DISCUSSION

Feeding artery embolization of meningioma brought the necrotic change according to the occluded feeder

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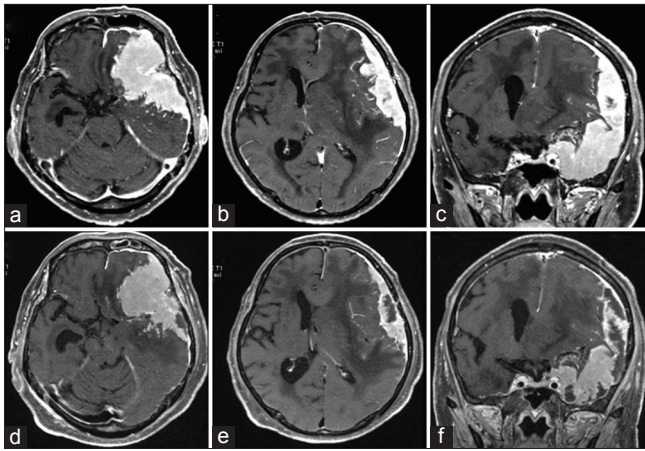


Figure 1: Magnetic resonance imaging of the head with gadolinium-enhanced T1 weighted scan. a, b, and c show the pre-embolization states. d, e, and f show the post-embolization states



Figure 2: Lateral view of the cerebral angiography at the feeder embolization. A shows the pre-embolization state of external carotid artery angiography. b shows the post-embolization state

area [Figure 1d-f]. Following to the tumor degeneration, gadolinium staining diminished. In contrast, tumor staining was never influenced at the inside border since feeders from internal carotid artery system had not been treated [Figure 1d-f]. Feeder occlusion by microparticles blocks blood supply. Gadolinium permeation reduces following to the diminished capillary flow volume. This effect associates to the gadolinium intake suppression. The tumor necrosis is known to diminish gadolinium-based reagent intake.^[5] According to the previous evidence, the reduction

of gadolinium staining area in en plaque tumor is interpreted to the necrosis by the feeder embolization.

CONCLUSION

Trisacryl gelatin microspheres are also effective to the embolization of meningioma. Similar to other embolic materials, it brings intratumor necrosis by the blood supply inhibition.

Declarations

All procedures performed in studies involving human participants were in accordance with the ethical standards of the Institutional Committee in Hokuto Hospital and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

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