Alcohol injections for management of vascular malformations

Clinical case report

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Abstract

Vascular malformations are congenital disorder that difficult to handle using open surgery. To avoid bleeding complications, absolute alcohol sclerotherapeutic injections were reported in the following case series.

In the period of July 2010 to June 2011, 11 direct percutaneous injection of 96% ethanol solution were performed in 5 patients with symptomatic venous malformations (VM) and 1 patient with arteriovenous malformation (AVM).

Introduction

Vascular malformations are congenital disorder that difficult to handle through a variety of techniques have been conducted, but the results can not really satisfactory because it always remain that would grow back later on even after the feeding arteries ligated. Some surgical excisions have been performed raises a lot of experience with surgery cause bleeding, longer operating time, requiring many blood transfusions, hemodynamic disturbances that endanger and elevating morbidity. To avoid these complications, reported the following case series.

Methods

From July 2010 to June 2011, 11 direct percutaneous injection of 96% ethanol solution were performed in 5 patients with symptomatic venous malformations (VM) and 1 patient with arteriovenous malformation (AVM). Each patient was evaluated and followed daily for a week. The diagnosis of VM was established on

clinical bases, and CT-angiographical imaging was only performed for one patient with AVM.

Amount of 96% alcohol injected in one patient on average 5-17 ml.

All procedures were performed by one vascular surgeon, and all direct alcohol injection were performed after a general anesthetic was administered to control pain, continuous hemodynamic monitoring.

In AVM, an inflow vascular occlusion techniques might help in decreasing the total amount of ethanol used to treat an AVM by ligations with silk 3-0 circled the area to be injected with alcohol. It is not possible to approach an AVM and access its nidus with an endovascular approach as does not have an expert, then direct percutaneous puncture techniques should be employed.

Perioperative 2dexamethasone intravenous injection (0.1 mg/kgbw) should be administered in case number 1,2 and 6, to prevent tissue swelling that may hazard the upper respiratory tract. Postoperative care included 2examethasone or prednisolone tablet orally for 7 days.

Results

VM:

Percutaneous ethanol injection resulted improvement of symptom and sign in patients with VM.

AVM:

The feeding arteries are branch

One week after injection in patient with AVM has resulted in improvement of symptom of tinnitus and decreased bulging mass.

Table 1

No	Sex / Age	Diagnosis	Location / ml alcohol injection	Repeated injections (interval)	Postinjection complication	Results: % of reducing mass
1	M/15	VM	Left face and lips/15	2 (6 months)	light headache for 4 days after	30%

					2nd injection	
2	M/28	VM	Upper lip/17	2 (6 months)	Light headache for 2 days after 2nd injection	40%
3	F/14	VM	Upper lip/3	1(4 months)	None	40%
4	M/3	VM	2nd finger and right antebrachial/5	1	None	40%
5	F/2.5	VM	Volar aspect of left hand/7	3(4-10 months)	0.5 cm skin necrosis at the injection point after 2nd injection	50%
6	F/15	VM	Left lateral hip/16	1	None	75%
7	M/47	AVM	Right temporoparietalis and zygoma/17	3 (3-4) months	Light headache for 2 days	Bruit decreasing 30%
8	M/18	AVM	Left upper extremity	1	None	Bruit (-) Thrill (-)

The reported VM-cases show a real improvement in case number 4 and 5, some improvement in case number 1 and number 2, and does not indicate a dangerous complication at follow-up.

In AVM case no.7, thrill and bruit were found on a more limited area, tinnitus decreasing. Although tinnitus is still there but it the patient fells almost inaudible. Some part of the mass was also ligated to control the blood flow.

In AVM case no.8, thrill and bruit were negative post injections.

There were not any bleeding complication occur in VM and AVM, because the surgical incision is not made. Complications observed only in the form of 3 mm diameter dry skin necrosis at the sites of needle puncture, and light headache for only 24-48 hours postsurgery.

Discussion

Venous malformations are low flow vascular lesions, spreading into cutaneous, subcutaneous, fascia and muscle.[1,2] The extent of the spreading venules accompanied by lymphatic channels may complicate surgical attempts to excise it causing very much bleeding and leave a wide scar. To prevent such complications that cause morbidity and mortality, alcohol injection is a good safer alternative. [1,2,3]

Alcohol sclerotherapy facilitate mass reduction of venous malformation, although unable to produce improvements after only once injection. Alcohol causes denudation of endothelium, intense inflammatory reaction, and thrombosis of the venous malformation almost immediately. In the next several weeks fibrosis develops, and the venous malformation mass become smaller in size. [1,2,3,4]

Dosage of alcohol for direct puncture or transvenous approach is about less than 1 ml /kgbw in one session.[4,5] In our series the amount of alcohol injected were very much smaller in volume, but it has given rise to considerable results.

In our series, alcohol direct puncture or transvenous route have resulted efficacious for the treatment of vascular malformations and proved associated with low complications.

References

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