C1 feeding vein treatment based on the 18MHz US diagnostics and imaging

A valuable management approach when transillumination or virtual reality imaging is not sufficient.

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Disclosures

- No

C1 sclerotherapy

Common statements about C1 sclerotherapy:
- Very small vessels but big number of patients
- Often cosmetic indications
- Low cost and no need of the big investment /Low complication rate? Easy to do?/

But most of us will be probably less happy to treat this....

Reflux identification

In most of the cases probably will be sufficient

Saphenous veins
Branches
Perforators
Varicose veins
Feeding vein identification

Horizontal approach - transillumination

C1 sclerotherapy failure

Lack of the C1 lesion disappearance/closure
- improper technique of injection
- improper drug concentration
- persistent reflux in the big vessels (e.g., axial or collaterals)
  - feeding vein (FV) reflux persistence:
    - lack of the FV identification
    - improper injection
    - partial occlusion or lack of the occlusion

Complications
- matting
- hyperpigmentation
- skin necrosis

C1 reflux sources identification /if no large vein pathology present/

Visual assessment/double polarization light
Transillumination
Near Infrared light
Ultrasound

Vertical approach /C1 pathology/

Feeding vein identification
Methods
50 C1 lesions after sclerotherapy failure
Feeding vein identification
Augmented reality (Veinviewer) +
18 MHz probe Venous Doppler US

Material
50 C1 lesions
35 patients (28F/5M) with sclerotherapy-resistant C1 pathology /median age 43.2 y/
All the patients after previous sclerotherapy treatment
Number of previous sclerotherapy attempts to the same C1 lesion:
1 - 45%
2 - 50%
3 - 10%
No visible feeding veins by visual control or transillumination
No axial reflux, perforator incompetence
or varicose vein/branches in the standard duplex Doppler examination
CEAP class:
C1 - 50%
C2 - 22%
C6 - 28%
Previous surgery or minimal invasive treatment 30%
RESULTS
50 C1 lesions after sclerotherapy failure:

Feeding veins course (in relationship to the skin surface):
- vertical or oblique course 50%
- horizontal course 20%
- vertical + horizontal (>1 FV identified) 26%
- no feeding vein identified 4%

Reflux source:
- perforator/deep vein connections - 62%
- superficial vein connections - 26%
- perforator + superficial veins (>1 identified) - 12%

Initial diameter of the feeding veins in 18MHz US: 0.4 – 2.0 mm

TREATMENT / augmented reality or US guided sclerotherapy /

RESULTS
50 C1 lesions after previous sclerotherapy failure

Method of the feeding vein identification
(both, augmented reality and 18 MHz US applied in 100 % of the cases):
- Augmented reality (Veinviewer) - 20%
- 18 MHz US - 66%
- Augmented reality + 18 MHz US - 14%

6 month follow up

Treatment results:
- 45 out of 50 C1 lesions (90%) successfully obliterated
  - 72% single session treatment
  - 28% repeated treatment within 4-8 weeks

Conclusion
The combined approach based on the augmented reality and 18 MHZ US feeding vein identification improves the C1 sclerotherapy efficacy in the treatment of the pathology resistant to the primary treatment based on the standard approach.

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