Current trends in foam sclerotherapy

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Foam sclerotherapy (FS) has gained large popularity worldwide, notwithstanding a lack of standardisation in the methodology to produce and inject the sclerosant foam (SF). Furthermore possible innovative procedures have been introduced as well.

Several variables may interfere with SF formation and injection; literature data proved that: a) low- or no- silicon syringes are to be preferred; b) biocompatible gases (especially) CO2 produce shorter SF half life, while CO2+O2 combination prolongs SF half life; c) air gives slightly larger and less coherent bubbles and longer SF duration; d) 21G-25G needles are preferable to the smaller ones; e) higher concentrations of sodiumtetradecylsulfate (STS) or Polidocanol (POL) result in more dense and more durable SF.

FS is mostly performed through ultrasound guidance (UGFS) or through visual control (for obvious varices), though short or long catheters have been proposed more recently. Both the recent introduction of long catheter foam sclerotherapy (LCFS), and the possible combination of FS with phlebectomy of the varicose tributaries, seem to overcome a few of the objective limitations of UGFS (higher recanalisation rate and side effects/complications when treating large veins and using high SF volumes respectively). LCFS may (should) include the usage of tumescence infiltration to minimise the calibre of the saphenous vein/tributaries prior to SF delivery within the long catheter, with a predictable positive influence on the short-long term outcomes.

With regards to potential cerebral/pulmonary/cardiac complications of FS, patent foramen ovale (PFO) has been considered a probable causative pathologic factor, which induces phlebologists to a special care in patients with a known PFO or with symptoms (e.g. migraine) evoking this cardiac abnormality. Also endothelin release has been postulated as a negative factor which may condition several systemic signs and symptoms in FS.

More recently a substantial absence of any chemical activity of the SF bubbles in the “central” blood stream has been demonstrated, which is probably due to the prompt neutralisation proteins induce on STS and POL moleculae.

Finally a few suggestions such as a) use of low (up to 10 ml) volumes of SF, b) limb elevation prior to injections, c) limb immobilisation and no Valsalva manoeuvre after SF injection, d) usage of biocompatible gases, may result in a higher efficacy and especially in a higher safety profile for foam sclerotherapy, but some of these complementary measures have been recently questioned in a few scientific studies.