Synergy Between Locoregional Analgesia (Lra) And Iv Ozone (O_3) Therapy In Microvascular Recruitment: A Challenge To Save Limb After Femur Nail Infection. A Case Report

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Background

Infection can seriously complicate surgical treatment of fractures (up to 30%)[1]; if significant tissue damage is involved, compromised vasculature impairs access of host defences and antibiotics to affected areas, leading to permanent functional loss.

O_3 is a gas that can be administered iv after melting with saline solution (10-80 mcg/mL); combination with biological water leads to formation of reactive oxygen and lipid oxidation products, thus activating biochemical pathways that increase: erythrocytes' ATP and 2,3-DPG, NO release, platelets and neutrophil-phagocytic activity, antioxidant enzymes upregulation, staminal cells migration/differentiation at injured sites and re-endothelization[2-3]

LRA allows post-operative pain control and vasodilation, improving microcirculation[4] and antibiotic delivery to the infection site.

Methods

A 45 yo woman (BMI 40) with severe femur nail infection, submitted to multiple surgical debridements, VAC therapy and antibiotic therapies with poor effects during 3 weeks, was finally scheduled for hip disarticulation.

In order to manage anesthesia and pain control for the repetitive surgical procedures, a lumbar epidural catheter was placed with 0,2% ropivacaine PCA. As a last chance, O_3 was started (35 mcg/ml, 500 ml/day during 15 days) through CV access. No complication happened.

Circulating endothelial progenitors (CD106+45-,CD90+45-) were evaluated using monoclonal-antibodies; blood samples were obtained at day 0,7, 15 after O_3-starting.

Picture 1: Pre O_3 treatment

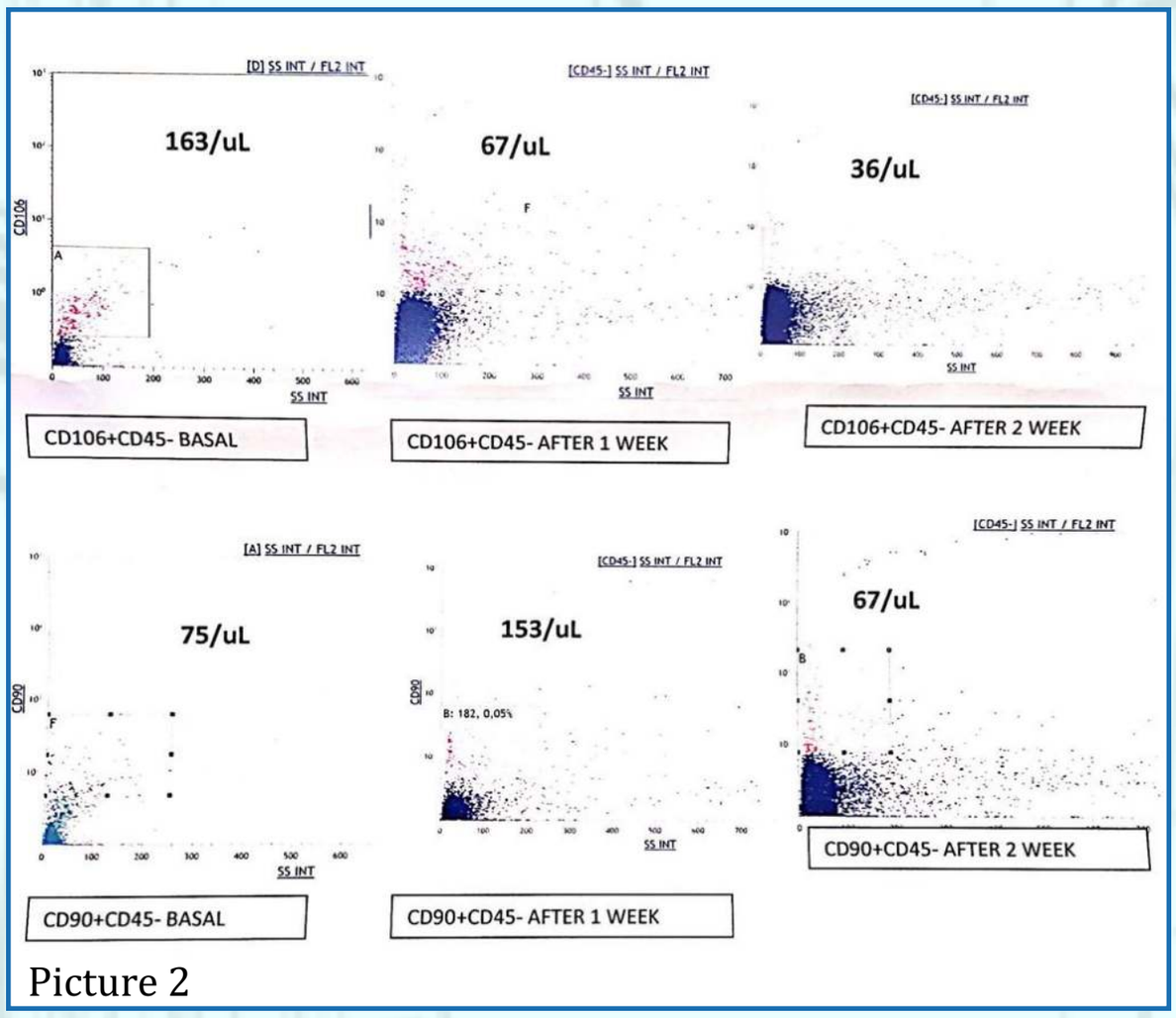
Picture 1: Post O_3 treatment

Results

At day 15th patient was free from infection: no clinical signs, wound healing (Picture 1), negative cultural exams.

Increased levels of endothelial progenitors, released from bone-marrow in response to flogosis, fell at day 15th, probably showing complete endothelial repair (Picture 2).

O_3 infusion had no side effects.



Picture 2

Conclusions

Sinergy between LRA and O_3 in microvasculature recruitment is a challenge to heal severe infections after surgical treatment of fractures; endothelial progenitors' levels could correlate with response to therapy.

References

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