SKIN BLOOD FLOW CHANGES DURING KETAMINE / MIDAZOLAM ANESTHESIA FOR INTRACTABLE CRPS-I

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INTRODUCTION

Skin blood flow (SBF) changes are a characteristic feature of CRPS-I. SBF-changes used to assess the effectiveness of therapies, i.e. sympathetic blocks, are well discribed. Ketamine/midazolam anesthesia seems to be a new therapeutic option for intractable CRPS-I. So far, effects of ketamine/ midazolam anesthesia on SBF have not been investigated in patients with severe CRPS-I.

AIMS OF INVESTIGATION

To collect first data on SBF in CRPS-I

- at rest and during vasomotoric challenge (local heating) with relief of spontaneous cutaneous vasoconstrictor activity
- before, during & after ketamine anesthesia
- to assess vasomotor regulatory capacity
- as potentially useful tool to objectively
  - monitor treatment success
  - assess vasomotor impairment in CRPS

METHODS

- 8 Patients with intractable CRPS-I
- Laser doppler flowmetry (PF 4001), heating probe (PF 371)
- D III, forearm, upper arm, area of maximal pain & allodynia
- Conditions: rest & vasomotor challenge
- Analysis:
  - Perfusion Units (PU)
  - Calculated Mean of circulating Blood Cells (CMBC)

Figure I: Significant increase in SBF at rest

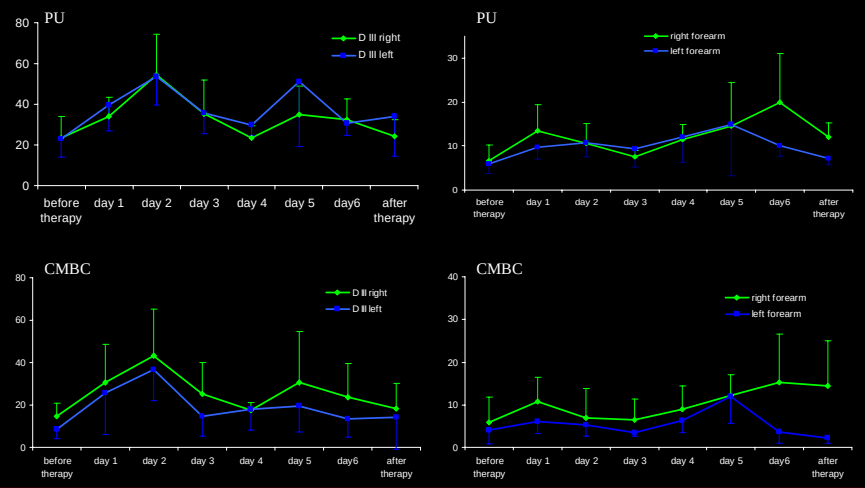
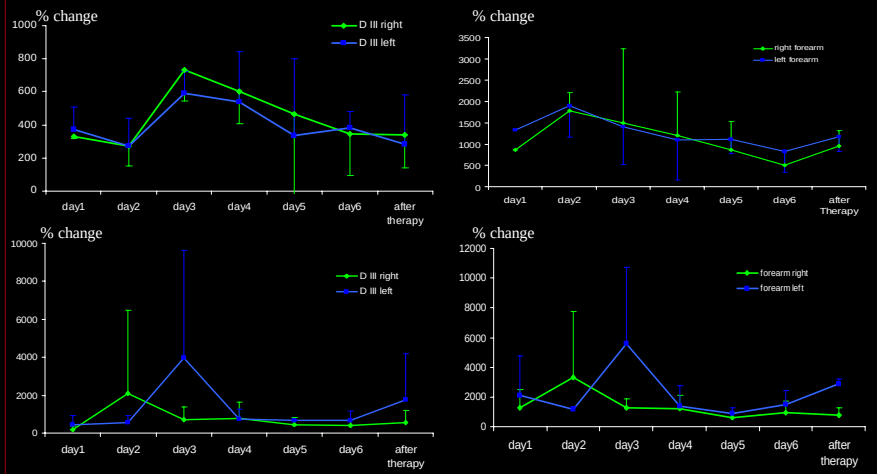


Figure II: Significant increase in SBF under heating conditions at day 2/3



#	Age	Sex	primary site	spread	maximal pain	Duration
1	24	m	both arms	no	hands (r>l)	1 year
2	46	f	right arm	yes, gen.	arms (r>l)	6 years
3	44	f	right foot	yes, gen.	upper arms (r>l)	6 years
4	30	f	right arm	no	right hand	2 years
5	41	f	right knee	no	right knee	2 years
6	19	f	right foot	yes, gen	right body side	6 years
7	22	f	right hand	yes, gen	right body side	6 years

Table I: Patient's characteristics, primary site of CRPS manifestation, status of spread (gen.: generalized), area of maximal pain/allodynia and duration.

RESULTS

Under ketamine anesthesia, a significant increase in SBF occured (clinically: hyperemia, edema) in the first 72 hours. Areas of maximal allodynia showed the strongest increase in SBF (up to ten-fold, $p<0.05$). Then, normalization of SBF and regained vasomotor reagibility (clinically: decrease of swelling, hyperemia, temperature changes) followed. During local heating highest Increase of SBF was observed on the 2nd and 3rd day during therapy.

CONCLUSIONS

LDF might become a useful tool to:

- monitor SBF-changes in CRPS-therapy
- potentially predict therapeutic success
- to quantify vasomotor reactive capacity (rest / vasomotor challenge)
- to indirectly asses sympathetic activity
- contibute to objectify diagnosis in CRPS

However, more evidence to support these first data is needed (homogenized groups) before LDF can be recommended as a valid tool in CRPS-I diagnosis & therapy.