Multicenter Study on the Asymmetry of Skin Temperature in Complex Regional Pain Syndrome: Temperature Distribution and Correlation with Symptom Duration

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Introduction

- **Complex Regional Pain Syndrome(CRPS)**
  - CRPS is an chronic a chronic pain disorder with a vasomotor symptoms.
  - **Diagnostic criteria** of CRPS includes **asymmetry of skin temperature** between the affected side and non-affected side.
  - The International Association for the Study of Pain (IASP) **Budapest criteria** (2004)

  "Evidence of temperature asymmetry (>1℃)"
  - American Medical Association (**AMA**) 6th ed

  "Cool skin temperature"
  - In our clinical experience, many CRPS patients whose skin temperature in the affected limb seems to be **cold even in the early stages** or the skin temperature between the bilateral limbs is **not so different**.
- **Aim of Study is to evaluate:**

(1) Skin temperature distribution of CRPS patients

(2) Correlation between temperature asymmetry & symptom duration in CRPS patients

Materials and Methods

- **Patients**
  - Pain centers of 3 university hospitals
  - Jan 2007 ~ Dec 2009
  - CRPS type 1 or 2 by Budapest Criteria

  : 4 symptoms +2 signs
  - Exclusion Criteria: bilateral pain, sympathetic blocks or neurolysis, vasodilating agents
- **Skin Temperature Measurement**
  - Infrared thermography using IRIS-5000® (Medicore Co., Korea), resolution of 0.1°C
  - ΔT = skin temperature on the affected side

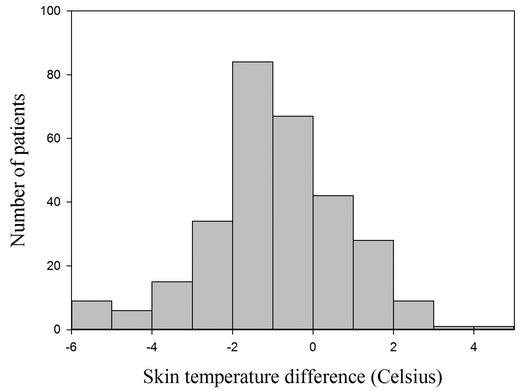
    – skin temperature on the unaffected side
- **Statistical Analysis**
  - ΔT distribution plotted with histogram
  - correlation analysis between ΔT and the symptom duration
  - ANOVA to investigate the mean ΔT difference among the 4 symptom duration groups (0-3 months, 4-6 months, 7-12 months, and more than 12 months)

Results

- **Patient Characteristics**

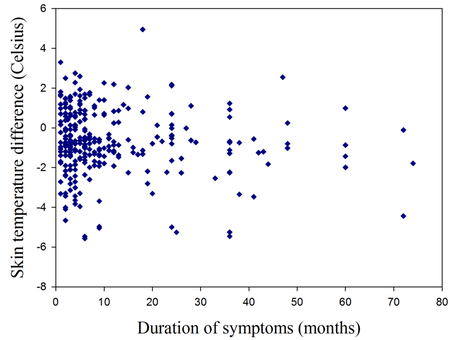
Parameter	Value
Sex (M/F)	114/79
Age (years, mean ± SD)	36.3 ± 14.2
Median of symptom duration (months)	7
Site (upper extremity/lower extremity)	76 / 117
ΔT (℃, mean ± SD)	-0.61 ± 1.63

- **Distribution of ΔT**

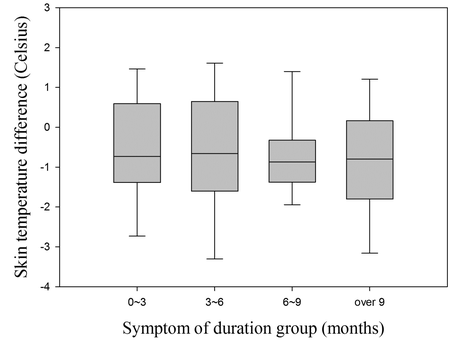


- ΔT < 1℃ in **only 46.7%**
- No "Cool skin temperature" in 37.3%

- **between ΔT & the symptom duration => no correlation**



- **between ΔT & the symptom duration groups => no difference**



Conclusion

- **The absolute difference in skin temperature between the bilateral limbs does not appear to be a appropriate diagnostic criterion for CRPS.**