LOW LEVEL LASER THERAPY IN THE TREATMENT OF CHEMOTHERAPY AND TARGETED THERAPY INDUCED PALMAR-PLANTAR ERYTHRODYSESTHESIA (PPE)

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SUPPORTIVE CARE MAKES EXCELLENT CANCER CARE POSSIBLE

INSTITUT JULES BORDET

Faculty Disclosure

X	No, nothing to disclose
	Yes, please specify:

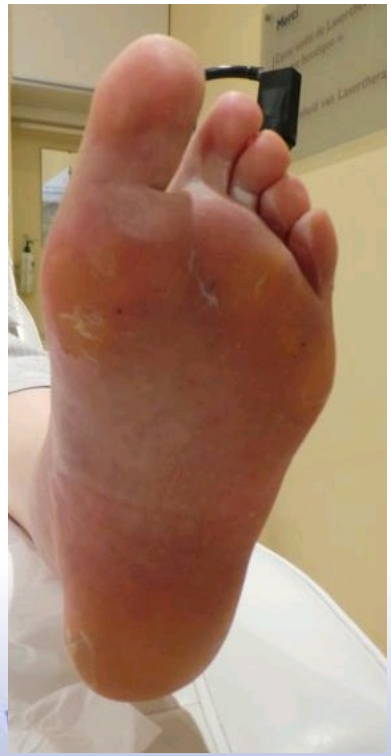
PPE : grades

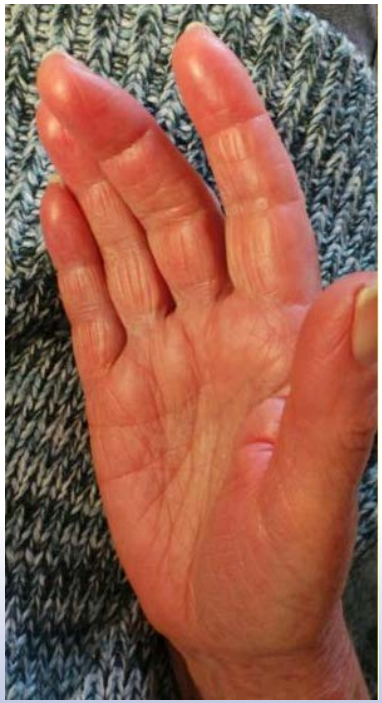
Grade 1 : Minimal skin changes or dermatitis (e.g., erythema, edema or hyperkeratosis) without pain

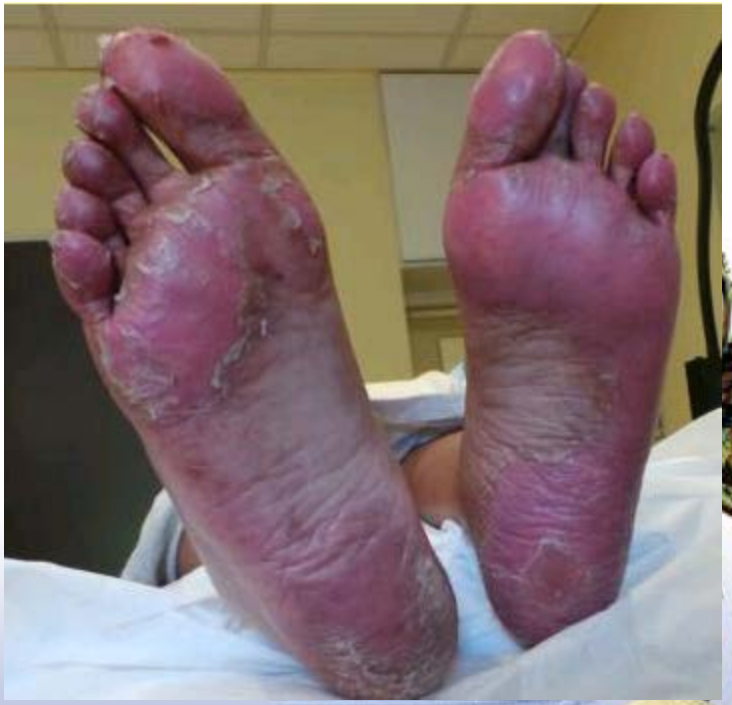
Grade 2 : Skin changes (e.g., peeling, blisters, bleeding, edema or hyperkeratosis) with pain; slightly limiting instrumental activities of daily living (IADLs)

Grade 3 : Severe skin changes (e.g., peeling, blisters, bleeding, edema, or hyperkeratosis) with pain; limiting self-care ADL

CTCAE Version 4.0, June 2010, National Institutes of Health, National Cancer Institute







PPE: histology and pathogenesis

- First described in 1984 by Lokich and Moore during a 5FU infusion
- Pathogenesis – unclear
- Histology is not specific but shows:

- interface dermatitis, keratinocyte necrosis, dilated blood vessels, edema, hyper or parakeratosis, perivascular lymphohistiocytic infiltration in the dermis, and possible eccrine squamous syringometaplasia

- **PPE etiology**: antimetabolites, antracyclines , TKI, dermatologic diseases, infections, denutrition, GVH

- **Standard treatment:** dose reduction or discontinuation of anticancer treatment, symtom control and local treatment

➢ **Bio-photomodulation (LLLT):** active for mucositis and radiodermatitis

Methods

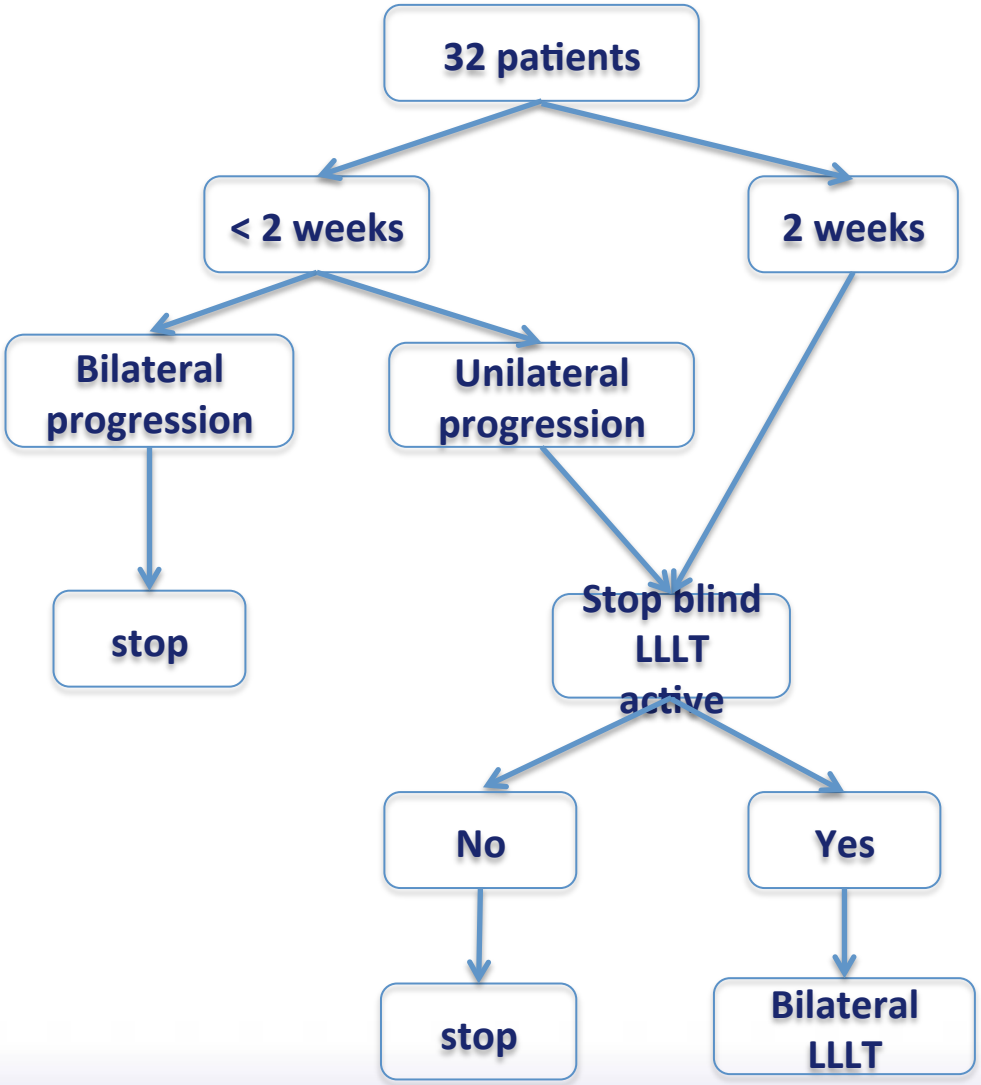
- N patients : 32 included and 31 evaluated
- Random allocation of treatment was done to determine the site to be treated with LLLT : left or right
- The other site had to be treated with sham laser

- The patient was his « own-control »

- Dose : 2 J/cm2, 500 mW, 3 x week and with minimum 2 weeks blinded
- Total of 6 weeks

- Evaluation
- blinded assessor 1 x week
- treating nurse on every session
- photos 1x week

Study design



Inclusions criteria

- Bilateral PPE grade 1, 2 et 3
- Patients on undergoing anti-cancer treatment: chemo and/or targeted treatment

Statistics

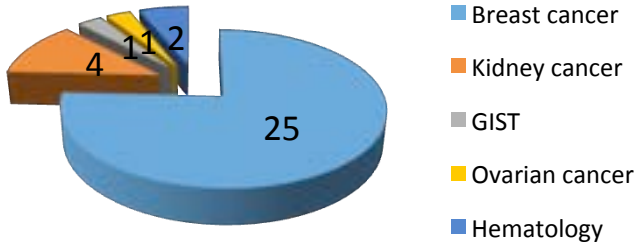
- Expectations: response in 57% for treated sites and 25% for sham treated sites; statistical power 90%

Results

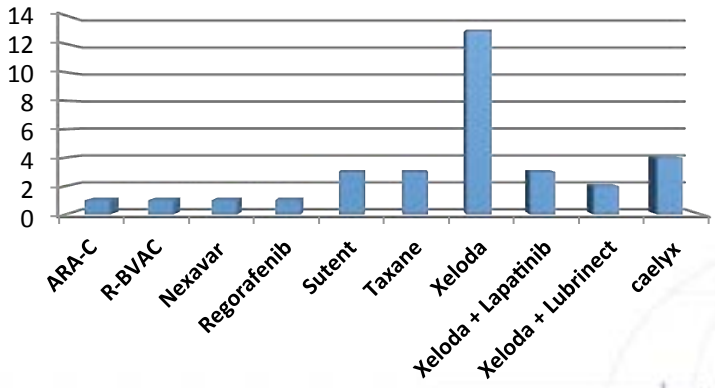
Patients characteristics	
N patients - excluded	32 - 1
Sex - female - male	 27 5
Age	58 years (34-80)
Tumor - solid - hematology	 30 2
Treatment - chemotherapy - TKI - combination	 22 5 5
Treatment body side - right - Left	 16 15

Frequency of PPE according to cancer type and treatment

Cancer type



Anticancer treatment



Results

- There was no evidence that the severity of the lesions, at baseline, was different according to the body site :

  Hand : p=0.25 Foot : p=1

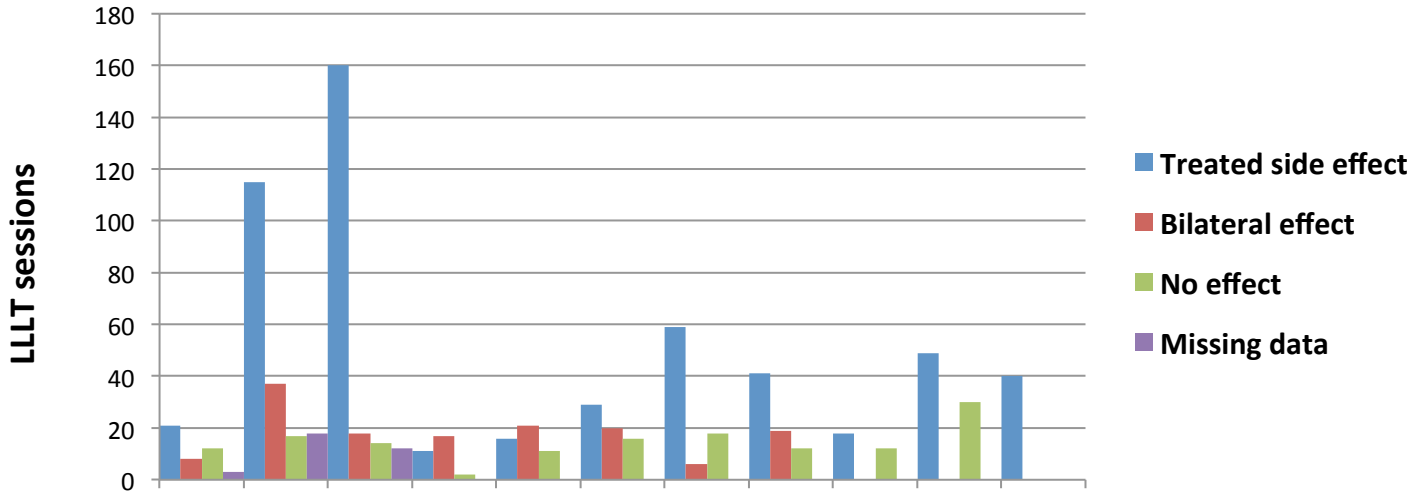
- This first main assessment was done before unblinding (T1)
- median 21 days (from 2 to 61 days)
- median number of sessions 10 (from 2 to 18)

- At that point the results of the treatment for 27 patients with available data (median and range) show that the overall median difference is 0 (-5;5) and the p value is 0.42

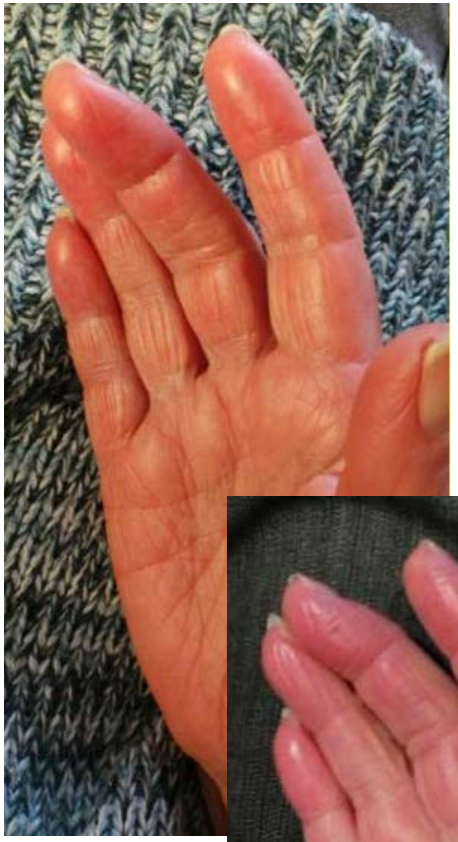
ScoreT0LT	ScoreT1LT	Difference T1-T0	ScoreT0SL	ScoreT1SL	Difference T1-T0
11 (4;21)	8 (2;17)	-2 (-15;6)	10.5 (3;25)	8 (2;16)	-2 (-18;5.5)

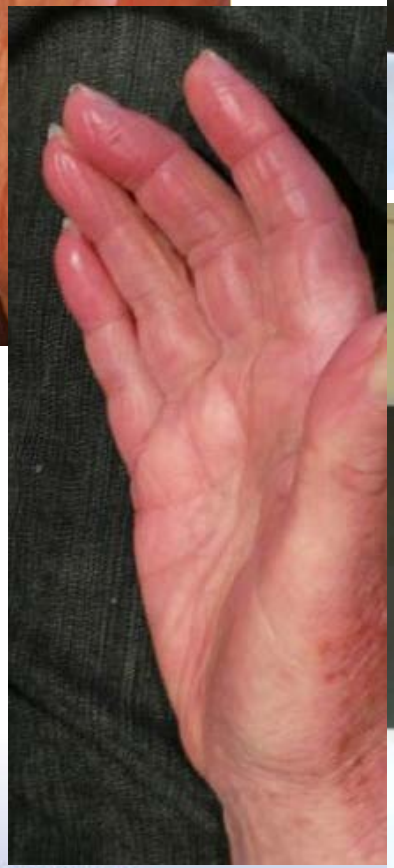
Results

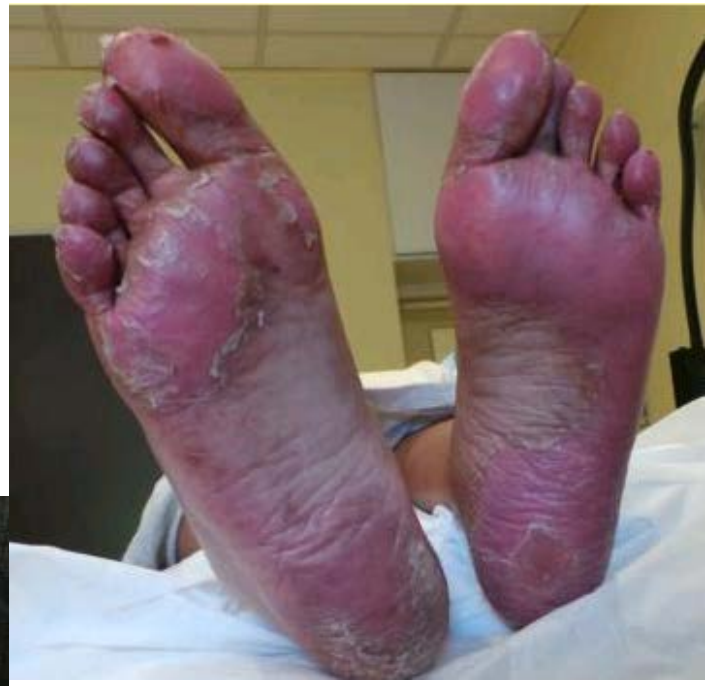
Individual data

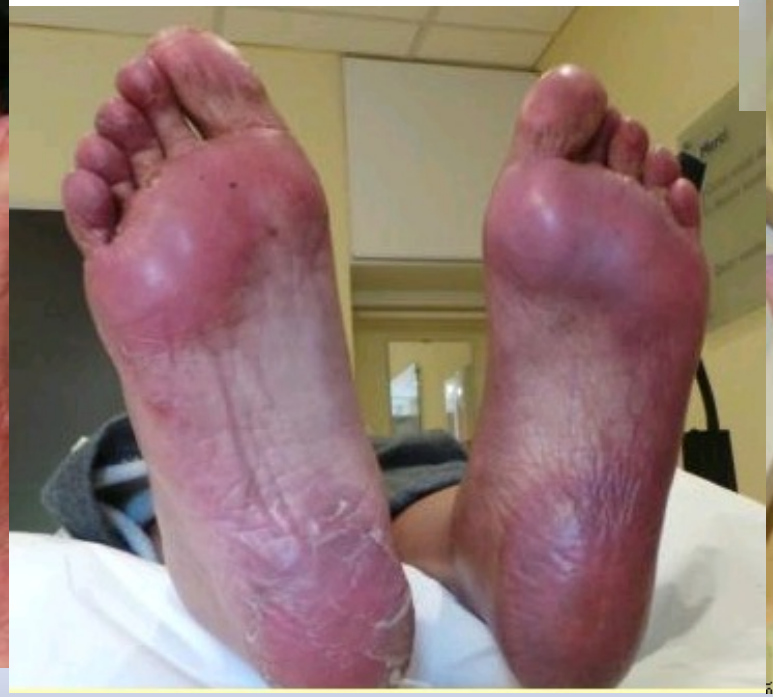


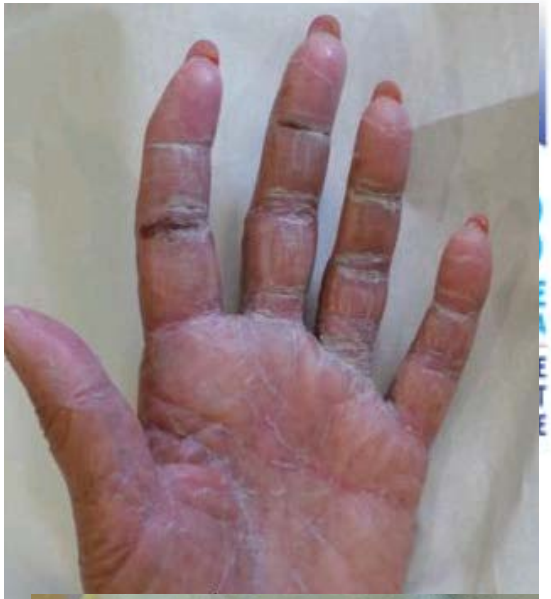
- Mean number of 28.5 sessions (range: 3-160)
- 15 patients reported a decreased pain (40% of them with a grade benefit at T1)
- PPE grade decrease in 19 patients (11 of them at T1)
- 72% of the patients were satisfied with the LLLT treatment

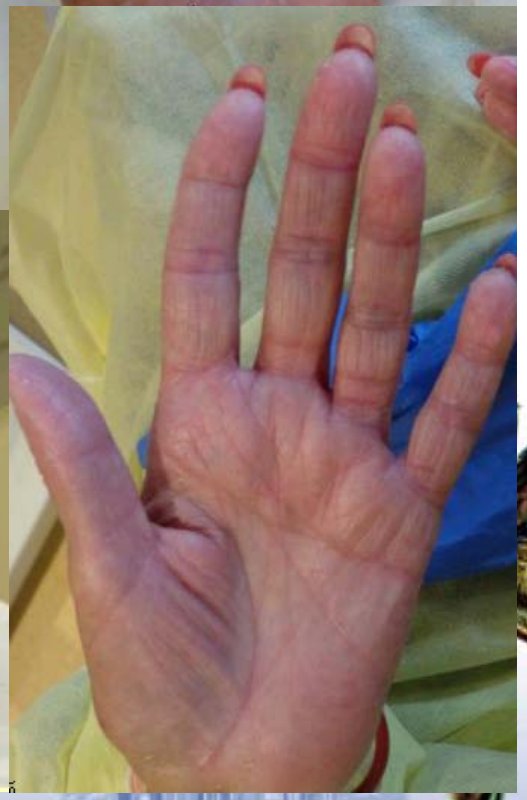












Conclusions

- **Our study indicates that photo-biomodulation was not significantly beneficial for the control of treatment induced PPE**
- **Nevertheless pain was decreased or stabilized and patients satisfaction was greater with LLLT**

- **Caveats:**
- small number of patients
- investigator dependent subjectivity

- **Future :**
- prospective data needed in larger cohorts
- reevaluation of LLLT dosage, duration and frequency

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