Reviewer's report

**Title:** Treatment of hemangiomas in children using an Nd - YAG laser in conjunction with ice cooling of the epidermis. Techniques and results

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**Reviewer:** Dr Kristen M Kelly

**Level of interest:** A paper whose findings are important to those with closely related research interests

**Advice on publication:** Accept after discretionary revisions

Resolution of hemangiomas is less than ideal in many cases and thus, a good, low risk treatment option would be beneficial. Laser treatment of hemangiomas with or without cooling is a controversial procedure, which has not been adequately studied. I think this manuscript describes an interesting technique for treatment of hemangiomas, which achieves impressive results. As such, I think this is an important paper, which should be published. I believe the below comments should be addressed before publication of this manuscript.

Compulsory Revisions:

1) General: Evaluation of any treatment for hemangiomas is difficult, because many of these lesions will resolve spontaneously. Some point of reference is required to confirm that the improvement observed in the study is not just improvement expected as a natural course of hemangioma evolution. Of course, this problem is best addressed by simultaneous evaluation of an untreated control group. However, inclusion of an untreated control group in a study design is difficult and perhaps unethical if the investigators strongly believe that their treatment offers significant benefit, as is likely the case for Vlachakis et al. As an alternative, they could compare the results of the present study to those of other evaluations in which there was a control group. This suggestion is not ideal, as the control and treatment groups are not likely to be matched for important characteristics, but at least it would provide some point of reference. The following recently published study includes a control group which could serve as a point of reference: Batta K, Goodyear H, Moss C, Williams H, Hiller L, Waters R. Randomized controlled study of early pulsed dye laser treatment of uncomplicated childhood haemangiomas: Results of a 1-year analysis, Lancet 2002; 360:521-527. At a minimum, Vlachakis et al. could use one of the comments in the study by Batta et al., "...about 40% of all haemangiomas might show complete clearance or minimal residual signs at age 1 year without treatment". Vlachakis et al. are reporting total resolution in 72.7% of patients, a difference that appears to be clearly superior to observation alone, but I think inclusion of the above-described discussion would add strength to their argument.

2) General: There are scattered grammatical errors, which should be addressed to ease reading. The errors are not significant enough to warrant refusal of the paper.

3) Patients and Methods: I assume that patients in this study did not receive any other treatments such as intralesional steroids or interferon. This should be stated in the "Methods" section.

4) Patients and Methods: The specific laser used should be indicated (make and model).

5) Results, Line 6: According to Table 2 there are 38 (not 30 as stated in the text) subjects who
achieved good, moderate or poor improvement after the first treatment. Were the other 8 patients given a second treatment? Did they drop from the study and if so, do the authors know why?

6) Results: How many treatment sessions did the 8 patients with scarring undergo? Was the scarring only noted after the last treatment?

Discretionary Revisions:
1) Results: I am interested in knowing why the patients were hospitalized for 1 to 2 days after treatment. In our experience, very few patients require hospitalization after laser treatment.
2) Discussion, Line 10: I believe the pulsed dye laser, not the argon laser, is considered the current standard treatment for port-wine stains and superficial telangiectasia.
3) Discussion: There are several methods of cooling utilized with laser treatment including cryogen spray cooling, contact cooling incorporated into laser hand-pieces and air cooling. The authors reference one article in which laser in combination with cryogen spray cooling was used for treatment of hemangiomas. Perhaps the authors could comment about the other methods of cooling and whether their use might achieve similar results. Contact cooling and air cooling could easily provide cooling before during and after treatment. Cryogen spray cooling could be modified for cooling before and after laser irradiation.
4) Figures: It would be nice to include some clinical photographs if they are available.

Competing interests:
None declared.