LED+LASER treatments showed 86.66% (n=13) of positive response and 13.33% of lesion recurrence (n=2).

5. Conclusion

This retrospective study was postponed due to the coronavirus (Covid-19) pandemic. We concluded that just illuminating the cervix from the outside (ectocervix) with LEDs promoted a higher cure rate than the protocol that associates LED lighting with LASER (ecto + endocervix). We also concluded that the follow-up of this type of treatment should always be long-term (two years at least).

Disclosures if required

The authors declare no conflict of interest.

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The role of pigmentation in tumor treatment with the investigational virus-like drug conjugate belzupacap sarotalocan in an in vitro and in vivo murine model

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Purpose: Tumor pigmentation is known to be a barrier for applying photodynamic therapy in ocular melanoma. We investigated the role of pigmentation in tumor behavior and compared the anti-tumor efficiency of belzupacap sarotalocan (bel-sar, AU-011) treatment using a pigmented (wt) and non-pigmented (TYR knockout, ko) in an in vitro and in vivo murine melanoma model.
Methods: A tyrosinase gene knockout B16F10 cell line was developed using CRISPR/Cas9. Following bel-sar binding and light activation (wavelength 690 nm) in vitro, cellular cytotoxicity and damage-associated molecular patterns (DAMPs) were measured by flow cytometry (FACS). Bel-sar treated tumor cells were co-cultured with antigen-presenting cells (APC) to assess phagocytosis and maturation. The B16F10 wt and ko cell lines were grown in syngeneic mice and treated with bel-sar and light.
Results: TYR knockout in B16F10 led to the loss of pigmentation which had no effect on in vivo tumor growth. Bel-sar treatment induced near complete cell death, accompanied with exposure of DAMPs, resulting in enhanced phagocytosis and maturation of DCs, regardless of pigmentation level. Bel-sar treatment delayed tumor growth in both tumor models. Pigmented tumors had more infiltrating M1 and less M2 macrophages compared with non-pigmented tumors. Bel-sar treatment stimulated more M1 influx in both models. Following treatment, CD8+T cells were upregulated, particularly in the pigmented tumors, and more mature dendritic cells were detected in the tumor draining lymph nodes.
Conclusions: Pigmentation influences the type of infiltrating macrophages in the tumor. Bel-sar treatment induced immunogenic cell death and a positive anti-tumor response in vivo with inhibition of growth in both pigmented and non-pigmented models, and stimulates the influx of M1 stimulating macrophages.

Key word: Pigmentation, melanoma, photodynamic therapy, AU-011, belzupacap sarotalocan, bel-sar

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Photodynamic therapy for nodular basal cell carcinoma up to 5mm located on high-risk area: effectiveness and long-term follow-up results

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Significance: Response rates evaluation of photodynamic therapy (PDT) for nodular basal cell carcinoma (BCC) treatment located on high-risk and low-risk areas of the face.
Approach: Two groups of nodular BCC were selected, debulked, and received 20% methyl aminolevulinate cream. After 3h, the first irradiation was performed (20min, 150J/cm2). Then, the cream was re-applied, and a second irradiation was performed after 1.5h (20min, 150J/cm2). Clearance at 30 days and recurrence-free survival rate were evaluated.
Results: The clearance at 30 days after PDT was 89% for the low-risk area group and 87% for the high-risk group. The recurrence-free survival at 60 months was 82% and 85% for the high-risk and low-risk groups, respectively.
Conclusions: No significant differences were observed between groups, nor for clearance at 30 days, nor recurrence-free follow-up. These results make the PDT an option for nodular BCC less than 5 mm located in high-risk areas.

Keywords: nodular basal cell carcinoma, single visit treatment, photodynamic therapy, methyl aminolevulinate

1. Introduction and Background

More than 70% of basal cell carcinomas (BCC) occur in head and neck area [1]. The gold standard treatment is surgery, but photodynamic therapy(PDT) can be an option, especially when there are multiple lesions as well as comorbidities that contraindicate surgery. The location of the BCC on the face can predict its behavior, as well as size [2]. Lesions located on high-risk areas defined as tumors on the "mask area" of the face (ie, nose, lips, eyelids, eyebrows, periorbital skin, chin, mandible, ears, preauricular and postauricular areas, temples) have a higher recurrence risk and, small lesions have low recurrence rate.

2. Aims

The evaluation of response rates of small BCC treated with PDT is very important to provide enough data to support a possible indication of the technique.

3. Methods

This study was conducted from January 2016 to April 2021 in a tertiary dermatology service at an oncology hospital, where 98 lesions of nodular BCC up to 5mm diameter in 52 adult patients were selected. The lesions were debulked and the material was taken to histological confirmation of BCC. The nodular BCCs were separated into 2 groups according to anatomical risk area of the face: group "high-risk area" (BCC located on nose, eyebrows, periorbital skin, chin, mandible, ears, preauricular, postauricular areas, and temples) and group "low-risk area" (others face areas). Then, a 20% methyl aminolevulinate cream was applied and the area was covered for 3 hours. The first irradiation was performed, using a commercial LED device system emitting at 630 nm (LINCE, MMOptics, Brazil). The lesion was irradiated for 20 minutes with 125 mW/cm2 totalizing 150J/cm2 of fluence. Immediately after the first irradiation, another cream layer was applied and covered, but now for only 1.5 hours. After that, a second irradiation was performed using the same parameters [3]. This PDT protocol, two sessions performed in a single day, was previously explored by the authors [3]. Thirty days after treatment, a 2mm punch biopsy was performed to evaluate the treatment response and estimate cure rate between the groups which was compared using *Chi-Square* test. A clinical and dermoscopic evaluation of the remaining cases was performed every 6 months until December 2022. The recurrence-free survival rate was calculated by using the *Kaplan-Meier* survival curve.

4. Results

Most of the lesions were located in high-risk areas and most of the patients were female. The mean age was 57 years old for patients with lesions in high-risk areas and 66 for low-risk group. The cure rate after 30 days confirmed by histological analysis presented no statistical significance between groups, showing 87% of clearance for high-risk group and 89% for low-risk group. The clinical profile of the two groups is presented in Table 1.

Table 1- The profile of the 98 BCC lesions up to 5mm

Group	Number of lesions	Female	Male	Mean age	Cure rate (30 days)
High-risk area	62	19	17	57	87%
Low-risk area	36	13	6	66	89%
*p value**					*0.946*

*Chi-Square test with significant differences for p<0.05.

The remaining cases had a mean follow-up of 34 months for low-risk group (range from 2 to 82 months) and 36 for high-risk group (range from 2 to 73 months). The recurrence-free follow-up at 12, 36, 48, and 60 months for the high-risk group was 96.2%, 91.5%, 87.8%, and 82%, respectively. Similarly, the recurrence-free follow-up at 12, 36, 48, and 60 months for the low-risk group was 96.6%, 92.7%, 85.6%, and 85.5%, respectively (Figure 1).

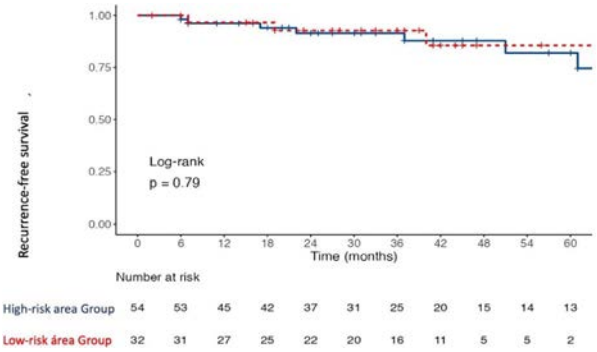

Figure 1 – Recurrence-free survival rate of the two groups of nodular BCC (high-risk area group and low-risk area group)

5. Conclusion

These data demonstrate that this single-visit PDT treatment protocol is a safe treatment choice for nodular BCC up to 5mm diameter, even for those located in high-risk areas of the face. The high cure rates and low recurrence in long-term follo-up make PDT an excellent treatment choice for dermatologists. It also has advantages such as aesthetic results and low side effects, considering the old age of the patients and their comorbidities.

Disclosures if required

No conflicts of interest to be declared

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Antimicrobial photodynamic therapy for nasal decolonization: comparison of *in vitro* model to *in vivo* trial outcomes.

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Keywords: Antimicrobial photodynamic therapy, nasal decolonization, clinical trial, *Staphylococcus aureus*, multidrug resistance

1. Introduction and Background

Surgical site infections (SSIs) are one of the most common healthcare-associated infections, frequently caused by *Staphylococcus aureus*, a