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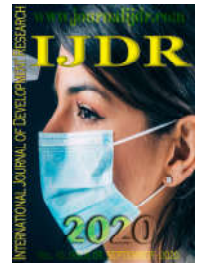
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RESEARCH ARTICLE

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UNUSUAL ULCERATIVE LESIONS IN RAMSAY HUNT SYNDROME TREATED WITH LOW LEVEL LASER THERAPY

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ABSTRACT

Ramsay Hunt syndrome (RHS) is a rare, severe complication caused by a reactivation of varicella-zoster virus (VZV) from the geniculate ganglion, nucleus of the sensory root of the facial nerve that results in peripheral facial weakness as well as rash around the ear. Low Level Laser Therapy (LLLT) has been used against herpesviruses. It also improves facial nerves that were previously impaired and hence, facial movements. This report documents a case of unusual oral and ear manifestation of Ramsay Syndrome and endometrial cancer using LLLT for analgesic effects of ulcerative lesions and on the improvement of facial paralysis and epithelial injuries caused by VZV.

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INTRODUCTION

It is no surprise that some viruses are more lethal than others. The most lethal ones comprise the family of zoonotic viruses, such as COVID-19, HIV, Ebola, among others. On the other hand, there are viruses which are less lethal and rarely show any manifestations in healthy individuals, such as the human herpes viruses. One type of herpes viruses, herpes zoster, is a viral eruption caused by a reactivation of the varicella-zoster virus (VZV). Immunocompromised patients often includes patients with cancer or those who are on chemotherapy. Ramsay Hunt syndrome (RHS) is a rare, severe complication caused by the reactivation of the VZV from the geniculate ganglion of the facial nerve (Rudd, 2014). RHS is characterized by peripheral facial nerve paralysis, accompanied by an erythematous vesicular rash on the ear or in the mouth. Patients with RHS have more severe facial paralysis and are less likely to recover completely when compared with Bell's palsy (Sweeney, 2001).

Photo biomodulation or Low-level laser therapy (LLLT) is a noninvasive treatment modality, cost-effective, and safe. LLLT has been used to reduce trigeminal neuralgia and postherpetic neuralgia. LLLT tends to be more effective than acyclovir in reducing pain and can decrease healing time of herpes labialis (Al-Maweri, 2018). This report documents a case of unusual oral and ear manifestations in a patient with Ramsay Hunt Syndrome and endometrial cancer using LLLT for analgesic effects of ulcerative lesions and on the improvement of facial paralysis and epithelial injuries caused by VZV.

CASE REPORT

The patient comprised an old female, 76 years of age, with a history of hypertension and hypothyroidism. The patient was on chemotherapy for endometrial cancer. After her third session of chemotherapy (i.e., carboplatin and paclitaxel), the patient developed dysphagia, odynophagia, tinnitus, hearing loss, left facial palsy, and severe herpes zoster rashes on the

left ear, compatible with a diagnosis of RHS. An oral examination revealed brownish-like ulcerative lesions and hypogeusia on the left side of the tongue and on the hard palate. Likewise, hyperemia was observed, as well as edema in the palatine tonsil. The patient experienced loss of appetite and surging mouth pain due to the ulcerative lesions in the oral cavity a nasoenteral probe was used. A neurological evaluation was necessary to exclude cerebrovascular accidents, brain tumors, and other kind of neurological diseases (Figure 1).



Figure 1. Images of the patient with RHS before LLLT, tongue and ear lesions on the left side of the face (A-B) with left facial palsy (C).

After the diagnosis, an intravenous antiviral (i.e., Acyclovir 400mg) was administered on the patient for ten days. Phototherapy with low-level laser was also applied for irradiation (DUO, ©MMOptics Ltda). Irradiation was used at a light dose of $110\text{J}/\text{cm}^2$. Energy density of $90\text{J}/\text{cm}^2$ was selected at a wavelength of 808nm in the extra-oral region and $20\text{J}/\text{cm}^2$ at a wavelength of 660nm in the oral cavity with fixed power of 100mW. This procedure was repeated for 10 days with an interval of 24 hours. After the third application of LLLT, the patient showed relief of symptoms and the herpes-related rash had a significant dermatological improvement. However, the nasoenteral probe was only taken out when evidence of mucositis was no longer visible. In the 4th week after treatment started, the patient only showed mild to moderate frailty of the left branches of the facial nerve. The patient was advised to follow a complementary treatment with physiotherapy. The total fading of lesions and recovery of hearing loss appeared in the 5th week (Figure 2).



Figure 2. Images of the patient after LLLT, complete fading of mucositis and left ear lesions (A-B) with persistent facial weakness on the left lower third of the face (C).

DISCUSSION

Herpes lesions can affect anyone who has been exposed to the virus. According to the literature, Ramsay Hunt Syndrome is more common in women, and in old and immunosuppressed patients. In the same way as a largest retrospective Ramsay Hunt Syndrome study (Murakami, 1997), we also treated the patient with acyclovir at the beginning of the rash to obtain better results. To complement the anti-inflammatory and

analgesic effects, we used low-level laser therapy. The literature suggests that mucositis can be triggered by chemotherapy which can affect the oral mucous membrane (Chaveli-López, 2014). The signs and symptoms of RHS can be worse in patients going through chemotherapy for endometrial cancer. The literature highlights the positive effects of LLLT for mucositis in cancer therapy. LLLT can reduce the pain, severity, and duration of the symptoms (Bjordal, 2011). Similarly, the laser used in irradiation provides a safe and effective alternative to combat herpes viruses, as it manages the retrograde demyelination and the proinflammatory cytokine activation of the microglia (Fan, 2015). It was noted that irradiation with LLLT, used in Bell's palsy, combined with facial exercises resulted in better outcomes when compared with exercise therapy alone (Ordahan, 2017). In our case report, the first week of virulence, the patient had a total hemiparesis but in the fourth week of LLLT she evolved to mild-to-moderate palsy. Total recovery from the facial paralysis was not achieved, this may be due to the fact that RHS is more likely to present severe to complete denervation. Irradiation doses were administered according to the manufacturer's protocol.

These are similar to other studies in terms of energy density, the recommended wavelength to treat mucositis, pain, bell's palsy, postherpetic neuralgia, and herpes virus in general (Al-Maweri, 2018; Fan, 2015; Ordahan, 2018). There is no consensus in the literature regarding the average recovery time in RHS. In a previous study, treatment based solely on drugs (i.e., prednisone and acyclovir) lasts around 15 days (Robillard, 1986). Another study could showed relief of the symptomatic phase after the second administration of photodynamic therapy. Nevertheless, a very limited area of hyperemia with skin maceration persisted (Shakhova *et al.*, 2019). In our case report, we obtained positive outcomes only after the third application, perhaps due to the severity of the case and lack of a photosensitizer. LLLT can be used to improve the healing of ulcerative lesions caused by Varicella Zoster and chemotherapy. Furthermore, can be effective for the relief of the symptomatic phase on RHS. The concomitant use of LLLT can bring to the patient optimal outcomes of recovery of facial paralysis caused by herpes viruses. This procedure represents a safe and noninvasive treatment.

Ethical approval: No ethical approval was required for this study.

Declaration of Competing Interest: The authors declare that they have no conflict of interest.

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