

Oral HSV Infections: Molecular biology and photodynamic therapy as new diagnostic and therapeutic tools

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Abstract:

Globally, it has been estimated that 3.7 billion people are Herpes simplex 1 (HSV) seropositive. In addition, numerous studies highlight the presence of HSV-1 and 2 (HSV-2) in the oral cavity of asymptomatic patients. The rate of asymptomatic shedding of both HSV-1 and HSV-2, the re-exacerbation following dental treatments and finally the professional risk, and new techniques to improve the diagnosis and treatment of this widespread pathology, will be discussed. In particular, the effectiveness of photodynamic therapy (PDT) in combination with molecular biology (Polymerase Chain reaction, PCR) tested on a cohort of patients will be presented. PDT was performed by diode laser light at 660 nm and 100 mWatt of power (Helbo, Bredent Medical, Senden, Germany), combined with photosensitizer phenothiazine chloride at 1%. The results show that the main HSV spread mode is asymptomatic. Particularly, HSV-1 is statistically more detectable in HIV positive and oncological patients than in immunocompetent ones ($p < 0,01$) but not in transplant patients ($p > 0,01$). HSV-2 is more detectable in HIV positive patients than healthy ones ($p < 0,01$) but not in cancer and transplant patients ($p > 0,01$). Regarding the exacerbation of HSV-1 after dental treatments, studies in the literature are discordant. Finally, for the occupational risk, the dentistry team appears to be more exposed than the general population. Extremely interesting data emerged from PDT applied in patients with herpetic lesion. The PCR in fact, besides being decisive in some doubtful clinical cases, has shown a statistically significant reduction of the viral load 100 and 150 times the first and the second cycle of PDT. Clinically PDT has proven effective in immediately reducing symptoms and healing, also increasing the recurrence interval. Therefore, it could be a powerful aid in patients with herpetic manifestations to be applied before carrying out any treatments in order to decrease the viral spread.

Biography

Martina Salvatorina Murgia graduated in 2020 with honors carrying out an experimental thesis at the University of Cagliari. She carried out research at the Molecular Biology Laboratory directed by Professor Germano Orrù and with the researcher and oral pathologist Cinzia Casu. She has published nine articles in indexed journals.