5-aminolevulinic acid photodynamic therapy versus carbon dioxide laser ablation for the treatment of condylomata acuminata

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Record Status
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Citation

Authors' objectives
Condylomata acuminata (CA) (also referred to as anogenital warts) are benign epithelial lesions caused by the human papillomavirus (HPV). No clear standard of care exists in the treatment of CA. Treatment options fall into 3 main categories—chemical or physical destruction, immunological therapy, and surgical therapies, including cryotherapy, laser therapy, and excisional procedures. Photodynamic therapy (PDT) with topical 5-aminolevulinic acid (ALA) has emerged as a fourth treatment category. The first line of defense against CA typically involves patient-administered topical treatment; however, the comparative effectiveness of such treatments has not been established, with some evidence suggesting that surgical techniques may be more effective in clearance rates than topical treatment. Description of Technology: This health technology assessment focuses on the use of ALA-PDT compared with carbon dioxide (CO2) laser ablation for CA. Porphyrin-mediated PDT is used to induce phototoxic reactions by synergy of a photosensitizer and light and is emerging as a possible alternative to CO2 laser ablation. In the case of HPV, proliferation of cells that accumulate protoporphyrin IX suggests that ALA-PDT applied to these cells will result in a production of reactive singlet oxygen and oxygen free radicals. These species will destroy adjacent membrane structures and ultimately the entire lesion. CO2 lasers are emerging as a routine clinical treatment for CA. The laser emits infrared light (10,600 nanometers) and works by absorbing water around and within cells, causing them to heat to the point that their destruction ensues. The beam of a CO2 laser can be focused to the point that it can be used to remove the cellular layers of a lesion, as well as vaporize the base of a lesion. Patient Population: ALA is approved in the United States and the European Union only for treatment of actinic keratosis; therefore, its use for treatment of CA is considered off-label. However, patients considered for treatment with ALA-PDT should not have hypersensitivity to porphyrins, hypersensitivity to soybean phosphatidylcholine, porphyria, or photodermatoses. CO2 laser treatment can be used for all patients. Clinical Alternatives: Noninvasive alternative treatments to ALA-PDT for CA include watchful waiting and topical treatments (such as imiquimod, cidofovir, trichloroacetic acid, podophyllotoxin, podophyllin). Surgical treatments include laser therapies, electrocautery, cryotherapy, and surgical excision, with CO2 laser ablation emerging as a routine clinical alternative. This health technology assessment focuses on the use of ALA-PDT as an alternative treatment to CO2 laser therapy.

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