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Case Report

Treatment of anogenital condylomata acuminata with topical photodynamic therapy: report of 14 cases and review

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SUMMARY

Photodynamic therapy (PDT) with 5-aminolevulinic acid (ALA) is an emerging technique for the treatment of genital human papillomavirus (HPV)-induced benign and premalignant lesions. We report herein a case series of anogenital CA successfully treated with ALA-PDT and review the literature available to date on this topic. Thirteen out of 14 cases of anogenital condylomata acuminata were successfully treated with topical PDT. We conclude that PDT can be considered a highly effective and safe treatment option for anogenital condylomata acuminata. Also, considering the available literature, the best results are likely to be achieved with a 16–20% gel formulation of 5-ALA and a red light dose of 100–150 J/cm^2.

1. Introduction

Genital condylomata acuminata (CA) are common, sexually-transmitted lesions, caused most often by the human papillomavirus (HPV) types 6 and 11. They affect both females and males and occur in all regions of the anogenital area. Conventional treatment, often involving repeated local drug application or invasive methods, has not been definitively demonstrated to be effective in eliminating CA lesions and preventing them from recurring.[1] Moreover, such treatments can be painful, are associated with a long healing time, and sometimes lead to bacterial infection.

Photodynamic therapy (PDT) with 5-aminolevulinic acid (ALA) is an emerging technique for the treatment of genital HPV-induced benign and premalignant lesions. Results from case series[2–7] and controlled trials[8,9] suggest that, compared with conventional therapies, topical ALA-PDT is an effective, safe, and well-tolerated treatment for CA, and is associated with a low recurrence rate.

We report herein a case series of anogenital CA successfully treated with ALA-PDT and review the literature available to date on this topic.

2. Cases

Anogenital mucocutaneous viral CA were diagnosed in 14 patients (seven males, seven females; age range 16–38 years, average 31.3 years) on the basis of the clinical picture, histological examination, and/or in situ DNA HPV hybridization. In female patients lesions involved the vulva (three cases), perianal region, fork, fornix, and portio; in males the penile shaft (four cases), suprapubic region, glans penis with foreskin, and urethral meatus were involved. Eleven patients had not undergone any previous treatment, while two had been treated with electrocoagulation and one with imiquimod 5% cream.

Following receipt of signed informed consent, a gel containing 16% 5-ALA was applied topically and covered with a polyethylene dressing. The same ALA solution was injected intralesionally through a standard insulin syringe into any large and/or thick lesions in order to achieve greater bioavailability of ALA. A transvaginal probe was used for application on internal lesions. After 3 h, the application sites were irradiated with 120 mJ/cm^2/s of red light with a peak emission at 630 nm (PDT-CLD 100, E.P.E.M. s.r.l., Italy) to a total dose of 150 J/cm^2. For the treatment of intravaginal disease, vaginal walls were separated by placement of a translucent plastic bivalve speculum. If deemed necessary, additional treatment sessions were performed every 15 days. Follow-up visits were performed after 15 days and at 1, 3, 6, and 12 months.

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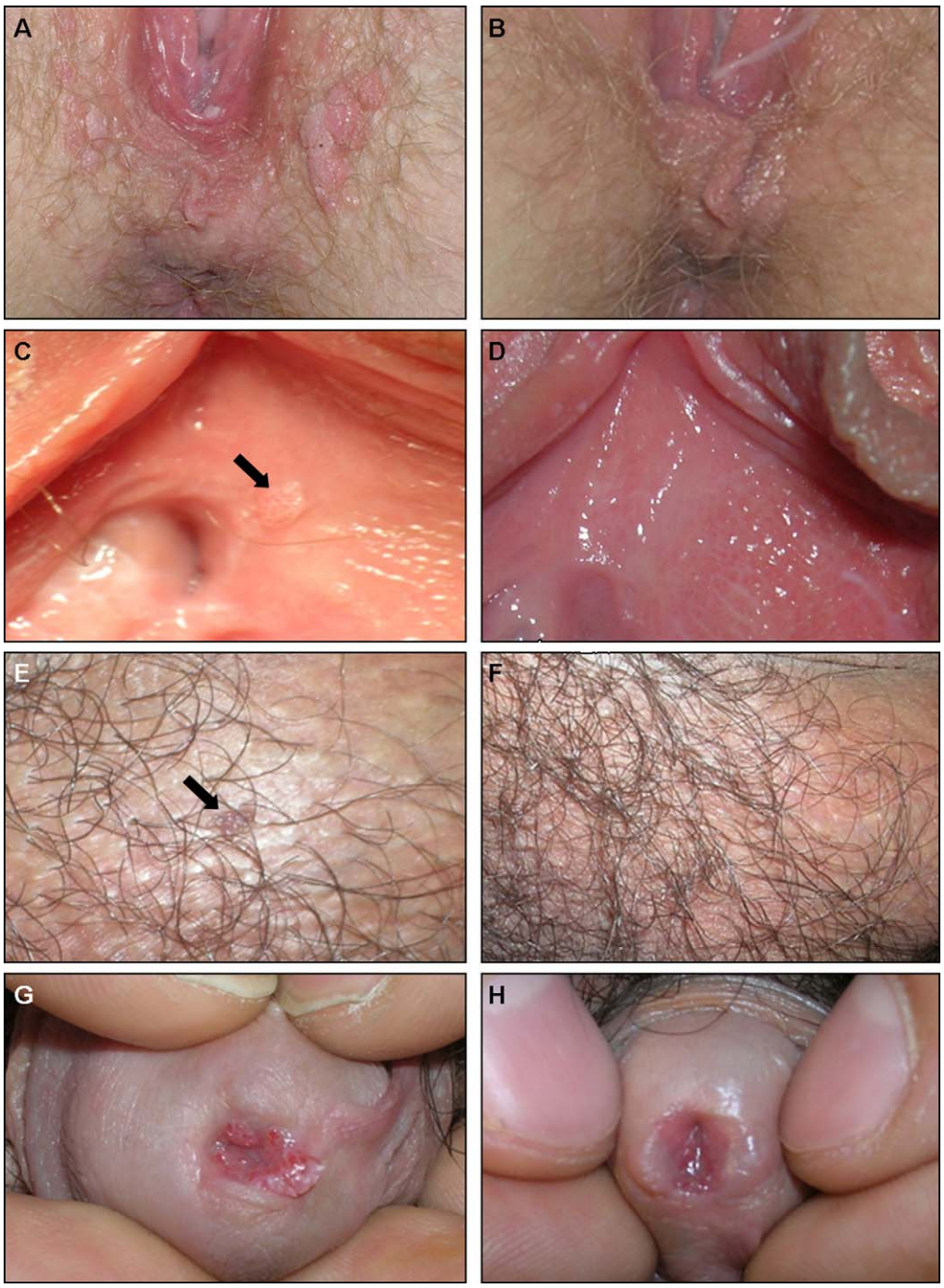

Figure 1. Pre- and post-treatment images of some cases. A: condylomata acuminata (CA) of the vulvar and perivulvar area; B: complete resolution after 1 month. C: single CA of the inner surface of the left labius minor (arrow); D: complete resolution after 1 month. E: single CA of the penile shaft (arrow); F: complete resolution after 1 month. G: CA of the external urethral meatus; H: complete resolution after 1 month.

A complete clinical remission was achieved in 9 patients after only one treatment session, and in 4 patients after two sessions (Figure 1). These 13 patients were followed-up for at least 12 months and no relapses were registered. In one case, who presented a large, flat-plaque CA area involving the auction, balanopreputial furrow and glans penis, an incomplete resolution occurred, and the patient was lost to treatment and follow-up after three sessions. No significant side effects were reported, however there was an intense sensation of burning during and immediately after exposure to the light.

3. Discussion

Our case series shows that a complete response was achieved in 13 out of 14 cases (92.8%) of anogenital CA treated with one to two sessions of ALA-PDT. No recurrences were registered and the treatment was very well tolerated by the patients. These data confirm those already available from previous studies. As shown in Table 1, a total of 313 patients with a cure rate of 94.9% and a recurrence rate of 7.9% (though there were wide differences in follow-up duration), as well as mild local side effects, have been

Table 1
Data from previous studies on the use of photodynamic therapy with 5-aminolevulinic acid for the treatment of genital condylomata acuminata

Ref.	Study type	No. cases	M/F	Concentration of 5-ALA gel	Applied light dose (J/cm^2)	No. PDT sessions	Response (No. cases)		No. recurrent cases (time after treatment)	Local side effects	Control	Notes on controls
							C	P/N				
2	CS	7	4/3	20%	50–100	1	4	3	1 (4 w)	Pain	None	
8	URCT	16	0/16	10%	116 ± 16	1	10	6	9 (12 m)	Burning, stinging, pain	CO_2 laser	Overlapping results
3	CS	25	0/25	3.3 mg/ml	30	1–?	25	0	0	Burning	None	
4	CS	12	12/0	20% (cream)	70–100	1–2	12	0	2 (2 m)	Erythema, swelling	None	
5	CS	164	108/56	10%	100	1–4	164	0	8 (1–3 m)	Burning, stinging, pain	None	
6	CS	9	9/0	20%	37	1–4	3	6	1 (3 w)	Pain	None	
7	CS	1	1/0	20%	50	10	1	0	0	Burning	None	
9	RCT	65	44/21	20%	100	1–2	65	0	4 (4 m)	Burning, stinging, swelling, erythema, erosion	CO_2 laser	Overlapping results. 100% rate of side effects (pain, erosion, ulcer, pigmentary changes)
P	CS	14	7/7	16%	150	1–2	13	1	0	Pain	None	
	Total	313	185/128				297	16	25			
	%	100	59.1/40.9				94.9	5.1	7.9			

M/F, male-to-female ratio; 5-ALA, 5-aminolevulinic acid; PDT, photodynamic therapy; C, complete; P/N, partial/none; P, present study; CS, case series/report; URCT, unrandomized controlled trial; RCT, randomized controlled trial; w, weeks; m, months.

reported in the literature so far.[2–9] Also, two controlled trials, one unrandomized[8] and the other randomized,[9] showed that ALA-PDT achieved similar results to CO_2 laser vaporization, the latter causing a higher frequency of transient and long-term side effects.[9]

When considering treatment modalities, lower concentrations of 5-ALA[8] and lower light doses[2,3,6,7] resulted in worse outcomes[2,8] or the need for more treatment sessions to achieve a complete resolution of lesions.[3,5–7] On the other hand, higher concentrations of 5-ALA coupled with higher light doses,[4,9] as in our study, showed optimal results without affecting the frequency and gravity of side effects. However, it has to be mentioned that at least two studies achieving worse results included a majority of patients who had proven refractory to previous treatments,[5,6] therefore the treated populations among the various trials cannot be considered homogeneous.

We conclude that ALA-PDT can be considered a highly effective and safe treatment option for anogenital CA. The best results are likely to be achieved with a 16–20% gel formulation of 5-ALA and a red light dose of 100–150 J/cm^2.

Conflict of interest: No conflict of interest to declare.

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