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4 | Histometric and histomorphologic comparison of combustion and ambustion using in vivo reflectance-confocal microscopy.

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ABSTRACT

BACKGROUND: When combustion and ambustion induce a superficial injury, they are summarized as superficial burns, regardless of the underlying cause. Reflectance-confocal microscopy (RCM) allows noninvasive imaging of the human skin on morphological features. We hypothesized that combustion and ambustion have different histomorphological effects on the human skin.

METHODS: Superficial burns caused by combustion (CO-group, five females, three males; aged 26.8 +/- 14.2 years) and caused by ambustion (AM-group, four females, four males; aged 28.1 +/- 13.8 years) were evaluated 24 h after injury. The following parameters were obtained using RCM on injured and noninjured (control) site: horny layer thickness, epidermal thickness, granular cell size, basal layer thickness.

RESULTS: Compared with the controls (12.8 +/- 2.5 microm), horny layer thickness decreased significantly to 10.6 +/- 2.1 microm in the CO-group, whereas it increased significantly to 17.8 +/- 2.8 microm in the AM-group. The epidermal thickness did not differ significantly in CO-group (47.9 +/- 2.1 microm) and AM-group (49.0 +/- 3.1 microm), however, both increased significantly compared with the controls (42.7 +/- 1.6 microm). The basal layer thickness increased more in AM-group (17.0 +/- 1.2 microm) compared to CO-group (15.4 +/- 1.1 microm). Both differed significantly compared with their controls (13.9 +/- 0.9 microm). The granular cell size increased significantly in both groups compared to the controls (721 +/- 42 microm), however, a significantly higher increase was observed in CO-group compared to AM-group (871 +/- 55 microm vs. 831 +/- 51 microm).

CONCLUSIONS: RCM evaluates significant histomorphological differences in superficial burns caused by combustion and ambustion. The term "superficial burn" should consider the underlying cause and thus supplemented by the term "combustion" or "ambustion."