



# Inflammaging and facial aging: a clinical case report in monozygotic twins

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## ABSTRACT

**Introduction:** Facial aging results from a complex interaction between intrinsic factors, including genetic predisposition and chronological aging, and extrinsic factors such as sun exposure, lifestyle, and systemic conditions. The concept of inflammaging describes a state of chronic, low-grade inflammation associated with the aging process, which contributes to structural skin alterations, redistribution of facial adipose tissue, decreased skin elasticity, and bone remodeling. These changes may manifest differently among individuals, even when they share an identical genetic background.

**Objectives:** To compare facial aging characteristics in two 74-year-old monozygotic twins with different lifestyles and professional contexts, through the analysis of clinical, photographic, and subjective parameters related to facial aesthetics.

**Methods:** An observational, cross-sectional study with a prospective component was conducted. Clinical data, lifestyle habits, and medical history were collected from both participants. Self-assessment questionnaires (Face-Q) were administered, and a standardized photographic protocol was performed, including the evaluation of facial proportions, cutaneous cephalometric angles, and clinical characteristics of facial aging.

**Clinical Case Description:** Both participants presented similar lifestyle habits regarding alcohol consumption (approximately one glass of wine per day), sleep pattern (around 12 hours per day), absence of regular physical activity, and lack of consistent sunscreen use (phototype IV according to the Glogau scale). Both participants had diabetes mellitus and dyslipidemia, while participant B additionally presented arterial hypertension and hypothyroidism. However, a significant difference

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was observed in their professional contexts: participant A worked predominantly in a rural environment with prolonged sun exposure, whereas participant B worked mainly in an industrial setting with less direct exposure to environmental factors. In the facial analysis, participant A exhibited more pronounced signs of cutaneous aging. An increase in the lower third of the face was observed, with an increased nasofrontal angle ( $138^{\circ}$ ) and nasolabial angle ( $99^{\circ}$ ), while the mandibular angle remained within normal parameters ( $125^{\circ}$ ). The jowl angle was classified as severe ( $148^{\circ}$ ). Clinically, the participant presented more evident periocular wrinkles, dark circles, highly pronounced nasolabial folds, and static perioral lines, features frequently associated with photoaging.

Regarding participant B, an increase in the lower third of the face was also observed. The nasofrontal angle ( $121^{\circ}$ ) and mandibular angle ( $124^{\circ}$ ) were within normal parameters, while the nasolabial angle was reduced ( $79^{\circ}$ ). The jowl angle was similarly classified as severe ( $148^{\circ}$ ). Although signs of facial aging were present, including crow's feet, dark circles, nasolabial folds, and static perioral lines, these features were overall less pronounced when compared with participant A. The results obtained from the Face-Q questionnaires revealed similar subjective perceptions between both participants regarding their facial appearance.

**Conclusion:** Environmental and occupational factors may significantly influence the manifestations of facial aging, even in monozygotic twins. The greater sun exposure observed in one of the participants appears to be associated with more pronounced signs of photoaging, possibly related to mechanisms of inflammaging. These findings reinforce the importance of prevention strategies and protection against environmental factors in modulating the skin aging process.

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