INVESTIGATING THE IMPACT OF ACNE’S ANATOMICAL VARIATIONS ON SOCIAL PERCEPTION.

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Introduction & Objectives:
Acne has been reported to have a negative impact on quality of life, however quality-of-life scores poorly correlate with disease severity scores. Previous research demonstrated existence of facial areas in which skin lesions have greater impact on gaze patterns. Therefore, we hypothesized that anatomical variants of acne may be perceived differentially. The aim of this study was to investigate effect of anatomic variants of acne on natural gaze patterns and resulting impact on social perception of acne patients.

Materials & Methods:
We have tracked eye movements from 245 adults (mean age = 31.63 SD = 10.63) viewing neutral and emotional faces with clinically relevant anatomical variants of acne (n=130). Images were additionally rated for acne-related visual disturbance while emotional faces were rated for valence intensity. Respondents of an online survey (205 participants, mean age= 35.08 SD = 11.48). were asked to rate their perception of pictured individuals’ personality traits.

Results:
Overall, faces with acne were perceived as significantly less attractive (difference: 1.1593; 95% CI, 1.0191 to 1.2995), trustworthy (difference: 0.3549; 95% CI, 0.2260 to 0.4838), confident (difference: 0.9573; 95% CI, 0.7853 to 1.1293), successful (difference: 0.6220; 95% CI, 0.4994 to 0.7445), and dominant (difference: 0.9086; 95% CI,0.7495 to 1.0675), with mid-facial acne presenting smallest deviation from healthy faces. (Fig 1) T-zone and generalized acne exhibited the least significant difference in respondents gaze behavior pattern from each other. (Fig 2) In concert, there was no significant difference in respondents grading of acne visual disturbance, and ratings for attractiveness, successfulness, and trustworthiness. Adult female acne was rated most visually disturbing and received lowest scores for attractiveness (F(3; 147)=78.252, p<0.001, ηp²=0.615). (Fig 3) Happy faces with adult female acne were rated as less happy than clear-skin faces (p<0.001). (Fig 4)

Conclusion:
Anatomic variants of acne have distinct impact on gaze patterns and social perception. Adult female acne has the strongest negative effect on recognition of positive emotions in affected individuals, on attractiveness ratings and, on forming social impressions. If perioral acne lesions are absent frontal lesions determine impact of acne on social perception irrespective of the presence of mid-facial lesions. This perceptive hierarchy should be taken into consideration while deciding treatment goals in acne patients prioritizing achieving remission in perioral and frontal area.
Fig. 1: Radar plot of personality ratings for each analyzed acne variant

Fig. 2: Gaze behavior while watching faces with acne. From left to right: healthy faces, mid-facial acne, T-zone acne, mixed acne, and U-zone acne. Upper row: calculated centroids of gaze fixation.
Middle row: Exemplary heat map of spontaneous gaze fixations; Lower row: Exemplary heat map from respondents instructed to assess acne.

Estimated marginal means with 95% confidence intervals

Fig. 3: Main effects of acne variant for the score of visual disturbance. Bars represent means of participants’ score of acne visual disturbance on a 5-grade Likert-like scale. Whiskers represent 95% CI.
Fig. 4: Impact of acne on emotion valence ratings. Differences with p<0.001 are marked with asterisk. Panel a: mean emotion valence rating for all images of respective acne variant; Panel b: valence rating for happy, angry, and neutral faces separately.