

Occasional acne; an acne variant

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Abstract: This article is about a common skin eruption that dermatologists face regularly in their clinics. It is a form of acne that patients frequently refer to as nightshifts acne, stress acne or airplane acne (after experiencing a prior occasion that might aggravate it). Physical or psychological stress is not the only causative factor, therefore we took into consideration of naming it based on its presentation irrespectively of the skin proneness to acne and self-limiting tendency, we name the entity as “occasional acne”. This article will discuss the similarities and differences between this entity and other forms of acne, as well as different causative factors that are involved in the eruption. These factors vary individually whether single or multiple factors might provoke it; maladaptation driven by mental and/or physical stress, temporary imbalance of sebum lipids and nicotine effect, etc.

Keywords: temporary acne, night shifts acne, airplane acne, acne

Discussion

Acne is one of the most common complaints seen by dermatologists. Based on the clinical picture, acne has been divided into different types: vulgaris, tarda, conglobata, mechanica, excoriee des jeunes filles (skin picking disorder), acne cosmetica, neonatal and infantum. The presence of comedones in these forms differentiates them from acne like eruptions, eg, steroid acne.

In this paper, we would like to describe a form of acne that the authors believe has not been categorized for different reasons: 1) it is temporary and mostly self-limiting, 2) it can affect patients who are not prone to acne and 3) it is always preceded by a trigger, therefore we have suggested the term: occasional acne.

The etiopathogenesis of acne is multifactorial, the theories explaining the exact mechanism are still evolving. This breakout appears as transient closed comedones associated occasionally with few small inflammatory papules or pustules on the face. We see similarities in our observations to the lesion described by Capitanio et al as (atypical) post-adolescent acne (APAA) or smoker's acne.¹

Pathophysiologically, it is well known that the initial changes are the microcomedones, as precursor lesions of acne, which are only histologically demonstrated, and clinically non-visible, induced by overproliferation and abnormal desquamation of keratinocytes in pilosebaceous unit's ducts with distention of their follicular walls,² they can then evolve into comedones secondary to multiple internal and external etiological contributing factors.³ Cunliffe et al concluded that, the normal pilosebaceous unit undergoes cyclical growth, in which the comedones undergo a shorter cycle in comparison with hair follicles, the whitehead (closed) comedones resolve usually within 12 days, blackhead (open) comedones over 2–6 weeks.⁴ Most of these comedones do not progress to inflammatory lesions.⁵ On the contrary, comedonal acne lesions are persistent and

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progressive, till a therapy really eradicates them all or even failed to eradicate those therapy-resistant ones which progress to macrocomedones size and enforce the physicians to try another method like a manual extraction,⁶ much rather the non-sequenced appearance of acne lesions which may give pustules without experiencing the event sequence.⁷

Based on the historical acne classification described by Burke in 1984: the Leeds score, we would elucidate the term physiologic acne which defined as 1–2 inflammatory lesions and/or 1–4 comedones on one side of the face⁸ and compare it to our suggested subtype of acne; they may show some similarity in the pathophysiological background and the mildness of the eruption, but Leeds score definition limits its presentation (unilateral appearance), thus it differs from occasional acne which is characterized by its transient course and a triggering event. The Leeds revised acne score presented in 1998 lacks the term physiological acne⁹ and is still considered cumbersome to be applied clinically.

In 2011, Bartenjev et al redefined the term physiological acne as:

very few pustules and/or papules on the face, retention lesions such as microcysts, open and closed comedones (blackheads, whiteheads) that cause an uneven (grainy) skin relief, dilated pores and occasional and/or constant hyperseborrhea resulting in localized shine, especially on the T-zone.

These imperfections are more often localized in the lower section of the face on the chin and mandibular areas and occasionally also on the forehead. It touches primarily female adults.¹⁰

Digging more into the possible aggravating factors, based on the fact that the classical acne vulgaris is provoked by stress, as this theory has been studied and well established,^{11–13} that complex relationship between stress and acne can aggravate and trigger breakouts independently from skin tendency to develop acne. Our observation that the patients with occasional acne are mostly bothered from such breakout because they have no acne over a long period of time or had adolescence acne which has been treated and stabilized long before the new eruption, a minority of patients thought the breakout could be a kind of allergy to food or as a result of using a new cosmetic product. However, due to their mild and transient course we would be reticent with the use of terms: new onset or recurrent acne for such a presentation.

Cortisol, the primary stress hormone, is the most important player in every eruption. Bouma et al¹⁴ proved

that cortisol responses to social stress vary between boys, free-cycling girls and girls on oral contraceptive pills (OCPs). Arbel et al¹⁵ proved that worries are associated positively with health symptoms in adolescents with high cortisol awakening response affecting the small endocrine organ of pilosebaceous unit.¹⁶ Nevertheless, DHEAS concentration – as well as cortisol – increases throughout the initial session of (acute stress), then cortisol drops but DHEAS remains sustained over longer time than cortisol after the period of acute stress in rhesus monkeys.²⁴ It is important to mention the oxidative/nitrosative stress in the initiation of acne caused by the ozone, nitrogen dioxide (NO₂) and sulfur dioxide as airborne outdoor pollutants as well as UV-rays,^{19,20} which plays an important role in the eruption.

Kim et al²¹ wrote that circadian disruption, typically induced by shift work, might negatively influence health due to impaired glucose and lipid homeostasis, reversed melatonin and cortisol rhythms, loss of clock gene rhythmicity, the insulin and triacylglycerol responses, increased morning plasma ghrelin as well as nocturnal and daytime circulating thyrotropin, cortisol and norepinephrine concentrations.^{22,23} Moreover it increases insulin and triacylglycerol responses as well as increasing morning plasma ghrelin, nocturnal and daytime circulating thyrotropin, cortisol and norepinephrine concentrations.^{22,23}

The skin faces a sort of maladaptation driven by mental and/or physical stress after: long-distance flights, exposure to airborne outdoor pollutants or quick rotating work schedules and night shifts. Therefore, it used to be named as airplane acne and nightshift acne. We stress the importance of stress as a role factor through the disturbed cortisol rhythm and level and deprivation of sleep.

Furthermore, despite the controversy in regard to the Cutibacterium acnes presence or absence of the inflammatory phase of acne or even development of papules or pustules or even other bacteria, eg, *S. epidermidis*, *S. aureus*, *K. pneumoniae*, *Streptococcus*, *Enterobacter*^{25–28}. Multifactors have a role in the formation of breakout lesions, specially by mechanical manipulation of an irritated skin, which might lead to a compensatory production or overproduction of sebum to balance the abrupt changes to skin status, for example multi irritative factors while traveling; such as: skin contact with harsh surfaced pillows, blankets or coming in contact with insufficiently clean surfaces like airplane seats or treys that people usually lay their faces on. Additionally, the effect of dry low

humid air in the airplane cabinet, or using comedogenic cosmetic face products provided on planes, trains or transit lounges in airports. In similarity, we can explain what is also used to be called: nightshift acne among doctors and nurses with similar reasons without forgetting the regular non-intended contact with different germs in such semi-contaminated areas like the wards. In all of these we can see an abrupt physical or biological change leads to an imbalance in what the skin usually adapted its status to it, which explain the eruption only when such changes happened, then they tend to fade away too.

Moreover, people attempt to maximize their arousal by increasing their caffeine intake in soft drinks, such as coffee, tea or power drinks, likewise in smoking, which is going viral between females in the recent decades. This habit is particularly seen in late and night shift workers. The effect of nicotine in the tobacco - as an agonist for acetylcholine on keratinocytes surfaces under higher concentrations of nicotine ($>100 \mu\text{g/mL}$) - induces the cutaneous hyperkeratinization and consequently the formation of microcomedon^{1,30}

The sebum production is influenced and altered by multiple factors such as: atmospheric changes³¹, comedogenic effect of squalene peroxides¹⁷, depletion of linoleic acid^{4,18} and UV irradiation, which induce local immunological disturbance that enhances the pathological skin colonization.²⁹

These stress-related flare-ups of the skin have no cyclic similarity like premenstrual acne flare among the postadolescent women, which improved under the regulating effect of oral contraceptive pills chosen for acne-prone patient. Thus, the preceding events and the self-limiting course are emphasized in this paper.

Treatment of these eruptions should not be vigorous because of its self-limiting tendency within days, but assessing the patient need is very important; a lot of advice seekers are aware already of this tendency, but they still look for a treatment option, to enhance their preparation for events ahead. As we mentioned, we would advise some options like: 5% Benzoyl Peroxide topically, which is safe also for pregnant (eg, L'Oréal, La Roche-Posay, France: Effaclar Duo contains 5,5% BPO), 2% Salicylic acid spot correctors (eg, Nestlé, Galderma, Switzerland: Benzac acne solutions intensive spot), the Salicylic acid derivative: Lipohydroxy acid: LHA (L'Oréal, La Roche-Posay, France: Effaclar A.I breakout corrector) or 0.1% Adapalene (eg, Nestlé, Galderma, Switzerland: Differin gel).

Encourage using acne-prone skin moisturizers to enrich the hydration and revive the Stratabiome prior and during trips and

night duties, etc., to minimize the possibility of breakouts by balance the low humidity to the skin while traveling on planes and to restore the skin protective mantle.

It is important to avoid self-skin-to-skin-contact through squeezing and manipulation.

We recommend avoidance of using new products provided by the hotels and to stick to the patient's routine products or to switch to practical carry-on alternatives (eg, alpha hydroxyl acid/beta hydroxyl acid: AHA/BHA) or BHA-only pads.

Traveling or working at night with minimum makeup or better makeup-free and of course especially while sleeping is very important advice.

We also recommend the patients to carry their own pillow with or at least their pillowcase to their night on-call, in case they have chance to nap.

The prophylactic intake of zinc (zinc sulphate and zinc gluconate) orally against breakouts should be avoided, unless has been advised after medical examination individually, because of some annoying side effects which can ruin your duty, trip or event preparation; gastrointestinal upsets bloody diarrhea may occur with the intake of zinc sulfate beyond recommended doses, zinc may be supplemented as 15 mg/d for adolescents and adults.³²

Conclusion

No single attributable factor can be pointed: the atmospheric changes, alteration in the sebum production, consumption of arousing measurements, irritation through manipulation or coming in contact with insufficiently clean surfaces, disturbed cortisol rhythm and deprivation of sleep and perceived stress; some or all of these factors might lead temporary to an abrupt level of anxiety on the pilosebaceous unit leading the skin to show a picture of mild fatigue with minicomedones or mini pustules, that's why: occasional acne has been chosen.

The avoidance of some factors is difficult. We have to explain to the advice seeker that the breakout is unpredictable but treatable when it shows signs of unresponsiveness, tends to occur frequently and progressively or shows new signs of transient and/or constant hyperseborrhea, then it should be revised by a dermatologist. The treatment options are mostly available OTC which eases their availability even if you overseas or abroad.

Disclosure

The authors report no conflicts of interest in this work.

References

- Capitanio B, Sinagra JL, Ottaviani M, Bordignon V, Amantea A, Picardo M. Acne and smoking. *Dermato-endocrinology*. 2009;1(3):129–135.
- Thielitz A, Sidou F, Gollnick H. Control of microcomedone formation throughout a maintenance treatment with adapalene gel, 0.1%. *J Eur Acad Dermatol Venereol*. 2007;21:747–753. doi:10.1111/j.1468-3083.2007.02190.x
- Zaenglein AL, Thiboutot CM. *Acne Vulgaris*. China: Elsevier; 2018:588–603.
- Wj C, Db H, Jeremy A. Comedone formation: etiology, clinical presentation, and treatment. *Clin Dermatol*. 2004;22:367–374. doi:10.1016/j.clindermatol.2004.03.011
- Egbers R, Do T, Voorhees JJ, Sachs D, Kang S. Computer-assisted alignment and tracking of comedones in patients with predominantly comedonal acne indicate that most resolve within 4 weeks and do not become inflammatory lesions. *J Invest Dermatol*. 2010;130:S58. doi:10.1038/jid.2010.28
- Wise EM, Graber EM. Clinical pearl: comedone extraction for persistent macrocomedones while on isotretinoin therapy. *J Clin Aesthet Dermatol*. 2011;4(11):20–21.
- Shaheen B, Gonzalez M. Acne sans P. acnes. *J Eur Acad Dermatol Venereol*. 2012. doi:10.1111/j.1468-3083.2012.04516.x
- Cunliffe WJ, Burke BM. The assessment of acne vulgaris—the Leeds technique. *Br J Dermatol*. 1984;111:83–92. doi:10.1111/j.1365-2133.1984.tb04020.x
- O'Brien SC, Lewis J, Cunliffe WJ. The Leeds revised acne grading system. *J Dermatolog Treat*. 1998;9(4):215–220. doi:10.3109/09546639809160698
- Bartenjev I, Oremović L, Butina MR, et al. *Topical Effectiveness of A Cosmetic Skincare Treatment for Acne-Prone Skin: A Clinical Study*. Vol. 20. Panonica, et Adriatica: Acta dermatovenerologica Alpina; 2011:55–62.
- Kokandi A. Acne flares among university female students: the role of perceived factors. *J Cosmet Dermatol Sci Appl*. 2013;03:26–29. doi:10.4236/jcdsa.2013.33A2006
- Al Robaee AA. Prevalence, knowledge, beliefs and psychosocial impact of acne in university students in Central Saudi Arabia. *Saudi Med J*. 2005;26(12):1958–1961.
- Green J, Sinclair RD. Perceptions of acne vulgaris in final year medical student written examination answers. *Australas J Dermatol*. 2001;42(2):98–101.
- Bouma EMC, Riese H, Ormel J, Verhulst FC, Oldehinkel AJ. Adolescents' cortisol responses to awakening and social stress; effects of gender, menstrual phase and oral contraceptives. The TRAILS study. *Psychoneuroendocrinology*. 2009;34(6):884–893. doi:10.1016/j.psyneuen.2009.01.003
- Arbel R, Shapiro LS, Timmons AC, Moss IK, Margolin G. Adolescents' daily worry, morning cortisol, and health symptoms. *J Adolesc Health*. 2017;60(6):667–673. doi:10.1016/j.jadohealth.2017.01.007
- Zouboulis CC. The skin as an endocrine organ. *Dermato-endocrinology*. 2009;1(5):250–252.
- Ottaviani M, Camera E, Picardo M. Lipid mediators in acne. *Mediators Inflamm*. 2010;2010:1–6 Article ID 858176. doi:10.1155/2010/858176.
- Downing DT, Stewart ME, Wertz PW, Strauss JS. Essential fatty acids and acne. *J Am Acad Dermatol*. 1986;14(2):221–225.
- Krutmann J, Moyal D, Liu W, et al. Pollution and acne: is there a link? *Clin Cosmet Investig Dermatol*. 2017;10:199–204. doi:10.2147/CCID.S131323
- Al-Shobaili HA, Alzolibani AA, Al Robaee AA, Meki ARM, Rasheed Z. Biochemical markers of oxidative and nitrosative stress in acne vulgaris: correlation with disease activity. *J Clin Lab Anal*. 2013;27:45–52. doi:10.1002/jcla.21560
- Kim, TW, Jeong, JH, Hong, SC. The impact of sleep and circadian disturbance on hormones and metabolism. *Int J Endocrinol*. 2015;2015:591729.
- Benedict C, Hallschmid M, Lassen A, et al. Acute sleep deprivation reduces energy expenditure in healthy men. *Am J Clin Nutr*. 2011;93:1229–1236. doi:10.3945/ajcn.110.006460
- Fekedulegn D, Burchfiel CM, Violanti JM, et al. Associations of long-term shift work with waking salivary cortisol concentration and patterns among police officers. *Ind Health*. 2012;50(6):476–486.
- Maninger N, Capitanio JP, Mason WA, Ruys JD, Mendoza SP. Acute and chronic stress increase DHEAS concentrations in rhesus monkeys. *Psychoneuroendocrinology*. 2010;35(7):1055–1062. doi:10.1016/j.psyneuen.2010.01.006
- Shaheen B, Gonzalez M. Acne sans P. acnes. *J Eur Acad Dermatol Venereol*. 2013;27:1–10. doi:10.1111/j.1468-3083.2012.04516.x
- Behzadi E, Behzadi P, Voicu C. Propionibacterium acnes and the skin disease of acne vulgaris. *RoJCED*. 2016;3:117–120.
- Dréno B, Pécastaings S, Corvec S, Veraldi S, Khammari A, Roques C. Cutibacterium acnes (Propionibacterium acnes) and acne vulgaris: a brief look at the latest updates. *J Eur Acad Dermatol Venereol*. 2018;32(Suppl 2):5–14. doi:10.1111/jdv.15043
- Kumar B, Pathak R, Bertin Mary P, Jha D, Sardana K, Gautam H. New insights into acne pathogenesis: exploring the role of acne-associated microbial populations. *Dermatologica Sinica*. 2016;34:67–73. doi:10.1016/j.dsi.2015.12.004
- De Luca C, Valacchi G. Surface lipids as multifunctional mediators of skin responses to environmental stimuli. *Mediators Inflamm*. 2010;2010:321494. doi:10.1155/2010/321494
- Theilig C, Bernd A, Ramirez-Bosca A, et al. Reactions of human keratinocytes in vitro after application of nicotine. *Skin Pharmacol*. 1994;7:7–315.
- Dünner M. Influence of physical factors (pressure and temperature) on exudation of sebum in man. *Dermatologica*. 1946;93:249. doi:10.1159/000255868
- Gupta M, Mahajan VK, Mehta KS, Chauhan PS. Zinc therapy in dermatology: a review. *Dermatol Res Pract*. 2014;2014:709152. doi:10.1155/2014/709152

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