Review Article:

Therapeutic Approaches of Infantile Acne: A Narrative Review Study

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Citation Kazeminejad A, Davoodi L, Hajheydari Z, Ghahari MJ. Therapeutic Approaches of Infantile Acne: A Narrative Review. Journal of Pediatrics Review. 2021; 9(4):309-312. http://dx.doi.org/10.32598/jpr.9.4.148.2

http://dx.doi.org/10.32598/jpr.9.4.148.2

Article info:
Received: 29 Sep 2020
First Revision: 25 Jun 2021
Accepted: 24 Agu 2021
Published: 01 October 2021

Key Words:
Acne vulgaris, Children, Review

ABSTRACT

Background: Acne vulgaris is a skin condition in children and has various presentations and differential diagnoses.

Objectives: The purpose of this review was to evaluate the therapeutic approaches of infantile acne.

Methods: In this narrative review, we searched articles published in English on infantile acne in Google Scholar, PubMed, and Scopus from 1981 to 2019.

Results: A total of 35 articles were selected for review. The treatment of acne often involves various medications that acne lesions. Different factors contribute to the pathogenesis of acne and its severity. The same principle and treatment strategy applies to all age groups diagnosed with acne.

Conclusions: The treatment strategy for infantile acne is similar to acne treatment at any age. Treatment is based on the severity of the acne and the risk of a future scar.

1. Context

Pediatric acne is divided into five subgroups: neonatal, infantile, midchildhood, preadolescent, and adolescent. Its prevalence in children is less than 2% [1, 2]. Infantile acne presents between approximately 6 weeks and 12 months of age [3-9]. Infantile acne presents with non-inflammatory and inflammatory acne, such as papules, inflammatory papules, pustules, comedons, nodules, and cysts. Lesions are usually distributed in the cheeks but can involve the chest and back [6]. Most children diagnosed with infantile acne have a mild to moderate course of the disease, resolving within 6 to 12 months of initial onset, and no treatment was needed [10]. The disease may persist for one to two years and has been increased the incidence and severity of adult acne [11, 12]. In the clinical presentation, most cases resolve by 4 or 5 years of age, but some persist into puberty [7, 8]. Sometimes infantile acne is severe and remains [13-16]. When additional signs of virilization appear, underlying endocrinopathies must

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be evaluated [4, 11, 13, 17-19]. In this situation, physical examination is necessary to assess developmental parameters, such as height, weight, growth curve, testicles, mammary glands, presence of pubic hair, hirsutism, clitoral hypertrophy, or increased muscle mass. In the case of any abnormalities, bone age evaluation and initial hormonal tests (Follicle-Stimulating Hormone [FSH], Luteinizing Hormone [LH], testosterone, dehydroepiandrosterone sulfate) should be done. Then the case should be referred to a pediatric endocrinologist [20].

This disease can affect either sex but has a higher prevalence in males [5, 21]. The higher prevalence of infantile acne in boys can also be explained by the increased secretion of LH, which stimulates testicular androgen synthesis [5, 11]. The etiology of infantile acne includes genetic predisposition and heightened sebaceous gland activity in response to normal levels of circulating androgens [13, 15, 22]. Propionibacterium acnes also plays a role in the etiopathogenesis of acne. Case reports of Malassezia as a cause of infantile acne are available [23, 24]. Infant skin is dominated by Firmicutes phylum, and their number is significantly higher than actinobacteria, which include the Propionibacterium genus [25]. Studies have shown that these bacteria contribute to the development of acne by stimulating keratinocyte proliferation and the synthesis of pro-inflammatory substances such as interleukin 8 [26].

Infantile acne can form scarring [3, 8, 27-29], and the risk of scarring is difficult to estimate [18]; therefore, in severe cases, treatment is necessary.

Differential diagnoses include periorificial dermatitis, keratosis pilaris, exogenous agents (steroid acne, acne pomade, chloracne), infections (e.g. Molluscum contagiosum), acne venenata, angiofibroma, milia, syringoma, bilateral nevus comedonicus, and chloracne [3, 6].

2. Evidence Acquisition

In this review, electronic databases of Google Scholar, PubMed, and Scopus were searched. We reviewed articles published on infantile acne from 1981 to 2019. The keywords included infantile acne. In this study, 86 articles on infantile acne were investigated, then a total of 35 articles were selected.

3. Results

Acne can be classified as predominantly comedonal, inflammatory, or mixed. For treatment of scarring, post-inflammatory hyperpigmentation, and erythema, the disease should be evaluated, and severity may be categorized as mild, moderate, or severe. Acne should be treated as a pathogenic disease, and such measures as reducing sebum production, preventing the formation of microcomedones, suppressing P. acne, and reducing inflammation be taken.

Several medications are available for acne treatment. The treatment program for this disease is similar to acne treatment at adult age. Generally, most patients diagnosed with infantile acne have a mild to moderate disease course and require no therapy. Improvement is seen within 6 to 12 months after the initial onset. There are no Food and Drug Administration (FDA)-approved medications for the treatment of acne in children, the treatment of infantile acne is essentially following the same therapeutic program for acne of adult age [13, 16, 17].

The standard treatment has two levels. Topical therapies include benzoyl peroxide, retinoids, azelaic acid, and antibiotics, and they are effective in mild cases consisting of comedones and pustules [17, 18]. Systemic treatment includes oral antibiotics (erythromycin or trimethoprim) or oral isotretinoin; they are used for severe cases [17, 18].

For mild disease, a topical agent, such as a topical retinoid or benzoyl peroxide, is useful. They can be used alone or in combination with other drugs. In mild inflammatory acne, adding a topical antibiotic (e.g. erythromycin or clindamycin) to the treatment would be appropriate. Studies revealed that benzoyl peroxide, because of its inherent nonspecific antimicrobial activity, effectively prevents acne [18, 30].

In moderate to severe inflammatory acne, the first line of treatment should be erythromycin. Tetracyclines are contraindicated in the treatment of infantile acne. In some patients with the colonization of Propionibacterium acnes, the alternative drug is sulfamethoxazole-trimethoprim. Other antibiotics used in infants with severe inflammatory acne are amoxicillin, cephalexin, and azithromycin [16]. Other medications include intralesional triamcinolone (2.5 mg/mL) for isolated nodules and cysts. Cryotherapy or topical corticosteroids for a short course can treat deep nodules and cysts [3].

For severe and intractable cases, the administration of oral isotretinoin is reasonable to prevent permanent physical and psychosocial sequelae. Fasting blood sugar and lipid profile, and liver function test should be obtained at baseline and on a routine basis throughout its administration [3, 14, 18, 31]. Isotretinoin begins with a

dose of 0.5 mg/kg/d to prevent an exacerbation at the beginning of therapy. Then the dose can be increased up to 1 mg/kg/d [18]. The typical dosage used in acne treatment showed no increased risk of bone demineralization or fractures [32, 33]. However, in a few cases, the premature closure of lower extremity growth plates was reported [34].

Most often, the side effects of topical agents are local skin irritations that should be managed by decreasing the frequency of application and by moistening the skin with non-comedogenic preparations [5].

4. Conclusion

In infantile acne, physicians should always and effectively involve the parents and provide extensive education. The physician should evaluate the potential side effects, indications, and contraindications associated with the treatment of choice [10]. Time should also be taken to discuss the importance of expectation management. Infantile acne is usually mild to moderate and improves within 6 to 12 months after diagnosis. In managing infantile acne, these points are essential: establish an accurate diagnosis by considering other possible differential diagnoses, evaluate for possible signs of an underlying endocrinopathy, initiate appropriate treatment depending on the severity of lesions, closely monitor the ongoing effectiveness of the current treatment regimen, assess for any potential side-effects, actively engage and educate the parent or caregiver regarding treatment side-effects and expectation management.

Ethical Considerations

Compliance with ethical guidelines

There were no ethical considerations to be considered in this research.

Funding

This research did not receive any grant from funding agencies in the public, commercial, or non-profit sectors.

Authors' contributions

All authors equally contributed to preparing this article.

Conflicts of interest

The authors declared no conflict of interest.

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