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# Neonatal and Infantile Acne Vulgaris: An Update

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## Practice Points

- Infantile acne needs to be recognized and treated.
- Acne in early childhood may represent virilization.

*Acne may present in neonates, infants, and small children. Neonatal and infantile acne vulgaris are not considered to be rare. The presentation of acne in this patient population sometimes represents virilization and may portend later development of severe adolescent acne. Neonatal and infantile acne vulgaris must be distinguished from other cutaneous disorders seen in newborns and infants. Infantile acne tends to be more pleomorphic and inflammatory, thus requiring more vigorous therapy than neonatal acne.*

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Acne vulgaris typically is associated with adolescence and young adulthood; however, it also can affect neonates, infants, and small children.<sup>1</sup> Acne neonatorum occurs in up to 20% of newborns. The clinical importance of neonatal acne lies in its differentiation from infectious diseases, the exclusion of virilization as its underlying cause, and the possible implication of severe acne in adolescence.<sup>2</sup> Neonatal acne also must be distinguished from acne that is induced by application of topical oils and ointments (acne venenata) and from

acneform eruptions induced by acnegenic maternal medications such as hydantoin (fetal hydantoin syndrome) and lithium.<sup>3</sup>

## Neonatal Acne (Acne Neonatorum)

**Clinical Presentation**—Neonatal acne (acne neonatorum) typically presents as small closed comedones on the forehead, nose, and cheeks (Figure 1).<sup>4</sup> Accompanying sebaceous hyperplasia often is noted.<sup>5</sup> Less frequently, open comedones, inflammatory papules, and pustules may develop.<sup>6</sup> Neonatal acne may be evident at birth or appear during the first 4 weeks of life<sup>7</sup> and is more commonly seen in boys.<sup>8</sup>

**Etiology**—Several factors may be pivotal in the etiology of neonatal acne, including increased sebum excretion, stimulation of the sebaceous glands by maternal or neonatal androgens,<sup>4</sup> and colonization of sebaceous glands by *Malassezia* species.<sup>2</sup> Increased sebum excretion occurs during the neonatal period due to enlarged sebaceous glands,<sup>2</sup> which may result from the substantial production of  $\beta$ -hydroxysteroids from the relatively large adrenal glands.<sup>9,10</sup> After 6 months of age, the size of the sebaceous glands and the sebum excretion rate decrease.<sup>9,10</sup>

Both maternal and neonatal androgens have been implicated in the stimulation of sebaceous glands in neonatal acne.<sup>2</sup> The neonatal adrenal gland produces high levels of dehydroepiandrosterone,<sup>2</sup> which stimulate sebaceous glands until around 1 year of age when dehydroepiandrosterone levels drop off as a consequence of involution of the neonatal adrenal gland.<sup>11</sup> Testicular androgens provide additional stimulation to the sebaceous glands, which may explain why neonatal acne is

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more common in boys.<sup>1</sup> Neonatal acne may be an inflammatory response to *Malassezia* species; however, *Malassezia* was not isolated in a series of patients,<sup>12</sup> suggesting that neonatal acne is an early presentation of comedonal acne and not a response to *Malassezia*.<sup>2,12</sup>

**Differential Diagnosis**—There are a number of acneform eruptions that should be considered in the differential diagnosis,<sup>3</sup> including bacterial folliculitis, secondary syphilis,<sup>13</sup> herpes simplex virus and varicella zoster virus,<sup>14</sup> and skin colonization by fungi of *Malassezia* species.<sup>15</sup> Other neonatal eruptions such as erythema toxicum neonatorum,<sup>16</sup> transient neonatal pustular melanosis, and milia and pustular miliaria, as well as a drug eruption associated with hydantoin, lithium, or halogens should be considered.<sup>17</sup> The relationship between neonatal acne and neonatal cephalic pustulosis, which is characterized by papules and pustules without comedones, is controversial; some consider them to be 2 different entities,<sup>14</sup> while others do not.<sup>18</sup>

**Treatment**—Guardians should be reassured that neonatal acne is mild, self-limited, and generally resolves spontaneously without scarring in approximately 1 to 3 months.<sup>1,2</sup> In most cases, no treatment is needed.<sup>19</sup> If necessary, comedones may be treated with azelaic acid cream 20% or tretinoin cream 0.025% to 0.05%.<sup>1,2</sup> For inflammatory lesions, erythromycin solution 2% and benzoyl peroxide gel 2.5% may be used.<sup>1,20</sup> Severe or recalcitrant disease warrants a workup for congenital adrenal hyperplasia, a virilizing tumor, or underlying endocrinopathy.<sup>19</sup>



**Figure 1.** Neonatal acne on the cheeks with pustules.

## Infantile Acne Vulgaris

**Clinical Presentation**—Infantile acne vulgaris shares similarities with neonatal acne<sup>21,22</sup> in that they both affect the face, predominantly the cheeks, and have a male predominance (Figure 2).<sup>1,10</sup> However, by definition, onset of infantile acne typically occurs later than acne neonatorum, usually at 3 to 6 months of age.<sup>1,4</sup> Lesions are more pleomorphic and inflammatory than in neonatal acne. In addition to closed and open comedones, infantile acne may be first evident with papules, pustules, severe nodules, and cysts with scarring potential (Figure 3).<sup>1,2,5</sup> Accordingly, treatment may be required. Most cases of infantile acne resolve by 4 or 5 years of age, but some remain active into puberty.<sup>1</sup> Patients with a history of infantile acne have an increased incidence of acne vulgaris during adolescence compared to their peers, with greater severity and enhanced risk for scarring.<sup>4,23</sup>

**Etiology**—The etiology of infantile acne remains unclear.<sup>2</sup> Similar to neonatal acne, infantile acne may be a result of elevated androgens produced by the fetal adrenal glands as well as by the testes in males.<sup>11</sup> For example, a child with infantile acne had elevated luteinizing hormone, follicle-stimulating hormone, and testosterone levels.<sup>24</sup> Therefore, hyperandrogenism should be considered as an etiology. Other causes also have been suggested. Rarely, an adrenocortical tumor may be associated with persistent infantile acne with signs of virilization and rapid development.<sup>25</sup> *Malassezia* was implicated in infantile acne in a 6-month-old infant who was successfully treated with ketoconazole cream 2%.<sup>26</sup>

**FIGURE NOT  
AVAILABLE ONLINE**

**Figure 2.** Infant with facial acne. Reprinted with permission from *Cutis*. 1993;52:16. ©1993, Frontline Medical Communications Inc.<sup>22</sup>



**Figure 3.** Infantile acne is more pleomorphic and inflamed than neonatal acne.

**Differential Diagnosis**—Infantile acne often is misdiagnosed because it is rarely considered in the differential diagnosis. When closed comedones predominate, acne venenata induced by topical creams, lotions, or oils may be etiologic. Chloracne also should be considered.<sup>14</sup>

**Treatment**—Guardians should be educated about the likely chronicity of infantile acne, which may require long-term treatment, as well as the possibility that acne may recur in severe form during puberty.<sup>1</sup> The treatment strategy for infantile acne is similar to treatment of acne at any age, with topical agents including retinoids (eg, tretinoin, benzoyl peroxide) and topical antibacterials (eg, erythromycin). Twice-daily erythromycin 125 to 250 mg is the treatment of choice when oral antibiotics are indicated. Tetracyclines are contraindicated in treatment of neonatal and infantile acne. Intralesional injections with low-concentration triamcinolone acetonide, cryotherapy, or topical corticosteroids for a short period of time can be used to treat deep nodules and cysts.<sup>2</sup> Acne that is refractory to treatment with oral antibiotics alone or combined with topical treatments poses a dilemma, given the potential cosmetic sequelae of scarring and quality-of-life concerns. Because reducing or eliminating dairy intake appears beneficial for adolescents with moderate to severe acne,<sup>27</sup> this approach may represent a good option for infantile acne.

## Conclusion

Neonatal and infantile acne vulgaris may be overlooked or misdiagnosed. It is important to consider and treat. Early childhood acne may represent a virilization syndrome.

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