

# Cantharidin for molluscum contagiosum

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## Abstract

**Question** I see numerous children with molluscum contagiosum (MC), and my reassurance that these lesions will disappear without treatment falls on deaf ears. Parents and children always want those lesions gone. They are also worried about other children contracting the infection. What therapies exist for this viral condition, and is cantharidin an appropriate and safe choice for the treatment of MC in children?

**Answer** Molluscum contagiosum is a very common skin condition caused by the MC virus. While it is known to be self-limiting and it resolves in 6 to 18 months with no long-term effects, treatment methods have been studied for children. Local treatment with cantharidin is suggested every 3 to 4 weeks, and at least 2 treatments are usually needed. Local erythema, burning sensation, and blisters are common side effects that should be considered.

**M**olluscum contagiosum (MC) is one of the most common skin conditions globally,<sup>1</sup> with a prevalence of 5.1% to 11.5% in children from infancy to 16 years of age.<sup>2</sup> There is no universally agreed upon treatment.<sup>3</sup>

Molluscum contagiosum is caused by a poxvirus, frequently infecting both healthy and immunocompromised children.<sup>4</sup> The molluscum contagiosum virus (MCV) has 4 genetically diverse but clinically identical types. Molluscum contagiosum virus 1 accounts for 97% of cases among children younger than 15 years of age,<sup>5</sup> MCV-2 is usually present in immunocompromised patients, and MCV-3 and MCV-4 are rare.<sup>6</sup> The skin lesions are called *mollusca*. They are rigid and dome-shaped, have a central dimple, and can be white or match the surrounding skin colour. Molluscum contagiosum virus is self-limiting and will resolve in 6 to 18 months, although in uncommon cases it can take up to 4 years.<sup>7</sup> In one UK study, the mean (SD) time of spontaneous resolution for MC in children 4 to 15 years of age was 13.3 (8.2) months.<sup>8</sup> Thirteen percent of cases did not resolve by 24 months; in 41% of cases there was transmission to other children in the household; and 11% reported a considerable decrease in quality of life.

Providing no active therapy is an acceptable route for children with MC; however, many children and parents prefer therapy to eliminate visible lesions.<sup>9</sup>

## Treatment choices

Multiple treatments exist, including destructive, immunomodulatory, and antiviral methods. Curettage is a widely used destructive therapy. In a prospective study of curettage, Hanna et al described cure in 81% of patients aged 1 to 18 years.<sup>3</sup> In a retrospective study with nearly 2000 patients (aged 1 to 18 years), curettage after applying a eutectic mixture of lidocaine and prilocaine resulted in cure in 70% after the first treatment and in another 26% after a second treatment; the remaining 4% needed a third treatment.<sup>10</sup> Patient and parent satisfaction was very high, at 87% in both studies.

For younger children and those concerned about the pain of curettage, imiquimod can be considered. Imiquimod is a

toll-like receptor 7 agonist that activates interferon- $\alpha$ , inducing an antiviral response. Among 13 children, applying 5% imiquimod cream 3 times a week for 16 weeks resulted in total lesion clearance in 15%, substantial reduction in lesion number in 54%, and progressive disease or no change in 31%.<sup>11</sup> Despite local side effects, which included erythema (85%), itching (75%), burning sensation (23%), and pain (11%), imiquimod was well tolerated. In a later study, 5% imiquimod cream had a 55% clearance rate after one visit, 41% after a second, and 3% after a third, with a 45% parental satisfaction rate and a 36% incidence of adverse effects.<sup>3</sup>

Silver nitrate paste was used in another regimen in 389 children to treat widespread, small (1 mm), erythematous papules and plaques, which are often observed in children with MC.<sup>12</sup> After one application all lesions were cleared in 90% of patients; second and third applications resulted in clearance in an additional 7% and 2%, respectively. With a very high overall success rate and no scar formation, silver nitrate might be an ideal therapy. Of note, 17% of patients experienced adverse effects. Further studies are needed, as this was the only study evaluating silver nitrate.<sup>12</sup>

## Cantharidin

Cantharidin is a fatty substance of the terpenoid class produced by beetles belonging to the order Coleoptera and the family Meloidae, otherwise known as *blister beetles*.<sup>9</sup> When epidermal cells absorb cantharidin, serine proteases are released, which cause the breakdown of the desmosomal plaque, part of the anchorage structure of cells; loss of intracellular attachments; and the formation of intraepidermal blisters.<sup>13</sup> Cantharidin is on Health Canada's restricted substance list and is classified as a natural health product.<sup>14</sup>


In a chart review of 300 US children (mean age 4.7 years) with MC who were treated with cantharidin crystals (52.5 mg) in a flexible collodion (7.5 mL) on up to 20 nonfacial lesions, 2.1 visits on average resulted in clearing of all lesions in 90% of children and meaningful overall improvement in an additional 8%.<sup>15</sup> Most (92%)

experienced mild to moderate blistering—as expected with the use of cantharidin—and about one-third (37%) experienced erythema at the site. Other side effects included mild pain (14%), burning sensation (10%), itching (6%), and postinflammatory hyperpigmentation or hypopigmentation (8%). Parents were then called for a follow-up interview and 95% reported they were satisfied. In another retrospective study from North Carolina, 405 children (mean age 5.8 years) were treated with cantharidin on a total of 9688 lesions for an average of 2.6 visits per child.<sup>16</sup> Side effects included pain (7%) and severe blistering (2.5%); rare side effects included itching, mild infection, irritation, id reaction, and bleeding. Most parents (86%) were satisfied and others were concerned about pain and irritation.

In a prospective randomized trial from Quebec, 124 children (median age of 5 years) with 10 to 100 nonfacial and nongenital lesions were treated with curettage, cantharidin, salicylic acid and lactic acid, and imiquimod.<sup>3</sup> Curettage was found to be the most efficacious, with side effects in only 5% of cases. Cantharidin was a useful alternative in the office setting but required more visits, and 19% of cases had moderate complications due to blisters.

More recently, a prospective, randomized, double-blind, placebo-controlled pilot study followed 94 children (mean [SD] age 4.9 [2.7] years) who were treated with cantharidin or placebo, with or without occlusion (4 groups in total).<sup>17</sup> The clearance rate with cantharidin and occlusion was 42%, and was 30% with cantharidin only. In the placebo group, 11% had clearance ( $P = .0065$ ). Minimal blistering and hyperpigmentation were observed with cantharidin.

## Conclusion

Molluscum contagiosum will disappear with no active therapy. However, with family demand for therapy to clear the skin, cantharidin is an option to consider that likely requires 2 office visits and has potential side effects such as erythema, burning, and severe blistering. 

### Competing interests

None declared

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