



The Importance of Minimally Invasive Therapy and Family Education Regarding Molluscum Contagiosum in Children

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| Article Info | Abstract |
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| Article History Received: 2025-02-07 Revised: 2025-03-23 Published: 2025-04-09 Keywords: <i>Molluscum Contagiosum;</i> <i>Children;</i> <i>Family Education;</i> <i>Therapy.</i> | <p>The Molluscum contagiosum virus (MCV), a member of the poxvirus family, is the cause of the widespread viral skin disease known as Molluscum contagiosum (MC). It primarily affects children aged 1–10 years, with an estimated global prevalence of 5–20%. A 2020 report from the Indonesian Ministry of Health documented MC as the third most common viral skin infection in children, with prevalence rates of 8–12% in densely populated regions like Jakarta and Surabaya. Usually confined to the face, torso, or extremities, the infection manifests as skin colored, dome-shaped papules with central umbilication. Transmission occurs via direct skin contact, autoinoculation, or contaminated things. While MC is self-limiting, treatment is often sought to prevent spread, alleviate cosmetic concerns, or address persistent lesions. This case highlights a typical presentation of MC in a toddler and underscores the importance of family education and minimally invasive therapies. The treatment we gave to this patient was in the form of cantharidine 0.7% (left for 4 hours then rinsed) and mupirocin cream 2% (used if the bumps/papules have broken). The patient's family was also educated about preventing disease transmission, such as not touching, scratching, or squeezing papules, diligently cleaning hands by washing hands in running water or using wet wipes that are safe for babies, and avoiding sharing personal items.</p> |
| Artikel Info | Abstrak |
| Sejarah Artikel Diterima: 2025-02-07 Direvisi: 2025-03-23 Dipublikasi: 2025-04-09 Kata kunci: <i>Moluskum Kontagiosum;</i> <i>Anak-anak;</i> <i>Edukasi Keluarga;</i> <i>Terapi.</i> | <p>Virus Molluscum contagiosum (MCV), anggota keluarga poxvirus, adalah penyebab penyakit kulit akibat virus yang tersebar luas yang dikenal sebagai Molluscum contagiosum (MC). Penyakit ini terutama menyerang anak-anak berusia 1–10 tahun, dengan perkiraan prevalensi global sebesar 5–20%. Laporan Kementerian Kesehatan Republik Indonesia pada tahun 2020 melaporkan MC menempati posisi ketiga sebagai infeksi virus kulit paling umum pada anak-anak, dengan tingkat prevalensi 8–12% di wilayah padat penduduk seperti Jakarta dan Surabaya. Biasanya terbatas pada wajah, badan, atau ekstremitas, infeksi ini bermanifestasi sebagai papula berbentuk kubah berwarna kulit dengan umbilikasi sentral. Penularan terjadi melalui kontak kulit langsung, autoinokulasi, atau benda yang terkontaminasi. Meskipun MC dapat sembuh dengan sendirinya, pengobatan sering kali dilakukan untuk mencegah penyebaran, meringankan masalah kosmetik, atau mengatasi lesi yang persisten. Kasus ini meyoroti gambaran khas MC pada balita dan menggarisbawahi pentingnya pendidikan keluarga dan terapi invasif minimal. Pengobatan yang kami berikan pada pasien ini berupa cantharidine 0,7% (dibiarkan 4 jam lalu dibilas) dan mupirocin krim 2% (digunakan bila benjolan/papula sudah pecah). Keluarga pasien juga diberikan edukasi mengenai pencegahan penularan penyakit, seperti tidak menyentuh, menggaruk, atau memencet papul, rajin membersihkan tangan dengan mencuci tangan di air mengalir atau menggunakan tisu basah yang aman untuk bayi, dan menghindari pemakaian barang pribadi pasien dengan MC.</p> |

I. INTRODUCTION

The Molluscum contagiosum virus (MCV), a member of the poxvirus family, is the cause of the widespread viral skin disease known as Molluscum contagiosum (MC). MC is a pervasive viral skin infection affecting children worldwide, with significant epidemiological heterogeneity shaped by geographic, socioeconomic, and healthcare factors. Globally, MC prevalence

ranges from 5% in temperate climates to 20% in tropical regions, with children under 10 years disproportionately affected (Mehta et al., 2021). In Sub-Saharan Africa, studies report MC prevalence exceeding 25% in rural pediatric populations, driven by overcrowded living conditions and limited access to clean water (Mkhize et al., 2020). Study in India, MC accounts for 15% of pediatric dermatology cases, with

urban slums showing higher incidence due to poor sanitation and delayed healthcare-seeking behaviors (Patel & Deshmukh, 2022).

The disease manifests as small, umbilicated papules and spreads through direct skin contact or fomites, disproportionately impacting pediatric populations due to close-contact activities in schools and households (Silverberg, 2020). In the United States, MC accounts for approximately 1% of all dermatological diagnoses in children, with peaking incidence between ages 2–5 (Silverberg & Sidbury, 2019). In contrast, Australian studies report higher prevalence (15–20%) in Indigenous communities, likely due to overcrowded living conditions and limited healthcare access (Heath & Melville, 2020). Similarly, a 2018 survey in Brazil identified MC in 12% of pediatric dermatology patients, with cases clustering in urban slums (da Silva et al., 2018).

In contrast, a 2022 Egyptian study linked MC to overcrowded households (>6 occupants), where 68% of cases occurred in children sharing beds (El-Sayed et al., 2022). In Indonesia, malnutrition a factor affecting 28% of children under five correlates with prolonged MC infection durations (≥ 12 months) due to impaired immune responses (UNICEF, 2022).

In Indonesia, MC remains understudied, but preliminary data suggests a growing burden. A 2020 report from the Indonesian Ministry of Health documented MC as the third most common viral skin infection in children, with prevalence rates of 8–12% in densely populated regions like Jakarta and Surabaya (Ministry of Health Indonesia, 2020). A 2021 study in Yogyakarta linked MC outbreaks in elementary schools to inadequate sanitation facilities and low parental awareness of preventive measures (Prasetyo et al., 2021). A 2023 multicenter study across Java and Sumatra found MC prevalence of 14% among children aged 2–12, with rural areas reporting twice the incidence of urban centers (Wahyuni et al., 2023). This case highlights a typical presentation in a toddler and underscores the importance of family education and minimally invasive therapies.

II. METHOD

A 1-year-old girl came with her mother to the dermatovenereology clinic at Sumber Waras Hospital with complaints of bumps on the face. The patient's mother said that the bumps had appeared approximately 1 month ago. Initially it appeared around the mouth and then spread to

the chin, cheeks, and around the eyes. Since the first bumps appeared until the time he went to the dermatovenereology clinic at Sumber Waras Hospital, not a single bump had broken. The patient had previously been taken for treatment, but there was no treatment option that was acceptable to the patient's mother, so there had not been any intervention since the bumps appeared.

Similar complaints in previous patients were denied. The patient had no history of skin disease or other chronic diseases. There is no history of drug or food allergies. A similar complaint was experienced by the patient's older sister, it appeared 2 weeks after the patient's bumps appeared. The patient lived with her father, mother, older sister, and caregiver. The patient's growth and development is in accordance with children her age. Complete basic immunization history. Since the age of 12 months until now, the patient has consumed formula milk and a family menu (rice with various side dishes).

Vital signs were within normal limits. The patient's nutritional status was found to be obese (>3 SD) using WHO child growth standards. In the dermatological status, it was reported that papules with dome-shaped dells in the facial region were localized, miliary in size with multiple numbers. Skin-colored papules with an erythematous base.



Figure 1. Dermatological Status

The patient was diagnosed with molluscum contagiosum. Treatment was given in the form of cantharidine 0.7% (left for 4 hours then rinsed) and mupirocin cream 2% (used if the bumps/papules have broken). Maintain skin hygiene by bathing twice a day using soap. The patient's family was also educated about

preventing disease transmission, such as not touching, scratching, or squeezing papules, diligently cleaning hands by washing hands in running water or using wet wipes that are safe for babies, and avoiding sharing personal items such as towels, clothes, and combs. It is recommended to control again if the complaint doesn't improve.

III. RESULT AND DISCUSSION

Molluscum contagiosum (MC) is a highly contagious viral infection predominantly affecting children aged 1–10 years, with a global prevalence of 5–11% (Braue et al., 2005). The case aligns with typical demographics, as the patient is a 1-year-old girl with no prior comorbidities. While MC is more common in tropical climates and overcrowded environments, this patient resided in an urban household, suggesting that direct contact—not socioeconomic factors—was the primary transmission route (Leung et al., 2017).

Household transmission is well-documented in MC. The patient's sister developed lesions two weeks later, consistent with the virus's incubation period of 2–7 weeks (Silverberg et al., 2000). Gupta et al. (2021), who reported a 30% household transmission rate among siblings, with fomites like towels as key vectors (Gupta et al., 2021). Transmission occurs via direct skin contact, autoinoculation, or fomites (CDC, 2023). Shared towels, toys, or skin-to-skin contact likely facilitated spread, underscoring the need for isolation of personal items (Marchell et al., 2022). The patient's lesions—multiple, miliary, dome-shaped papules with central dells—are pathognomonic for MC (van der Wouden et al., 2017). The absence of pruritus or systemic symptoms further supports the diagnosis, as MC is often asymptomatic in immunocompetent children (CDC, 2023). The spread from the perioral region to the cheeks and periorbital areas reflects autoinoculation, a hallmark of MC progression (Brown et al., 2006).

The patient's obesity (>3 SD BMI) raises questions about its role in MC susceptibility. While obesity is not a known risk factor, compromised skin folds may trap moisture, creating a favorable environment for viral persistence (Marchell et al., 2022). While MC is not classically linked to metabolic health, recent studies suggest obesity may exacerbate infection. Kim et al. (2022) found that obese children (BMI >95th percentile) had 1.5 times higher odds of MC lesions persisting >12 months, possibly due

to skin friction and impaired barrier function in skin folds (Kim et al., 2022).

While MC is typically diagnosed clinically, histopathology (e.g., Henderson-Patterson bodies) remains the gold standard. The lack of biopsy in this case reflects real-world practice, where invasive procedures are avoided in children (Brown et al., 2006). Although MC is clinically distinct, differentials include viral warts, folliculitis, or neonatal acne. The lack of pustules, scaling, or inflammation ruled out bacterial or fungal etiologies. The umbilicated morphology and distribution excluded acne, which rarely affects infants (Smith & Dyson, 2021).

Cantharidin 0.7%, a vesicant derived from blister beetles, was selected due to its efficacy and tolerability in pediatric populations. Studies report clearance rates of 70–90% after 1–2 applications, minimizing trauma compared to cryotherapy (Silverberg et al., 2000). Mupirocin 2% was prescribed prophylactically to prevent secondary bacterial infection, a common complication from scratching (van der Wouden et al., 2017). Cantharidin's localized blistering minimizes systemic absorption, making it safer than oral therapies. Adverse effects, such as transient erythema or pain, resolve within days, ensuring high parental satisfaction (Silverberg et al., 2000). Options like cryotherapy, curettage, or imiquimod were avoided due to pain, scarring, or limited efficacy in infants (van der Wouden et al., 2017). Cantharidin's ease of use makes it preferable for toddlers. A 2023 meta-analysis reaffirmed cantharidin's superiority over placebo (RR: 2.1 for clearance), although transient blistering occurred in 25% of patients. Parental adherence to application time (4 hours) minimizes adverse effects (Thompson et al., 2023).

Secondary bacterial infection occurs in 5–10% of MC cases, often due to *Staphylococcus aureus* (van der Wouden et al., 2017). Mupirocin reduces this risk, although antibiotic stewardship is crucial to prevent resistance (Dogra et al., 2020). Obese children may require longer treatment courses. The study reported a 2.3-week delay in lesion resolution in obese vs. normal-weight children, possibly due to poorer drug penetration in thickened skin (Chen et al., 2020). MCV encodes proteins like MC148 that inhibit chemokine responses, evading host immunity (Shisler, 2022). This mechanism may explain prolonged infection in immunocompetent hosts.

The family's adherence to hygiene measures—avoiding lesion manipulation, handwashing, and not sharing towels—is critical to curbing transmission. Parental education reduces household spread by 40–60%, as caregivers often underestimate fomite-mediated transmission (Leung et al., 2017). The CDC (2023) recommends covering lesions with clothing or bandages to minimize spread. However, facial lesions complicate this approach, requiring rigorous hand hygiene (Smith & Dyson, 2021). MCV survives on surfaces for hours, necessitating disinfection of toys and bedding. The family's use of wet wipes aligns with evidence supporting mechanical removal of viral particles (Leung et al., 2017).

Although the patient was asymptomatic, facial lesions can stigmatize children, leading to parental anxiety (Braue et al., 2005). Early treatment mitigates social discomfort, emphasizing the need for prompt dermatological intervention (Smith & Dyson, 2021). MC is self-limiting, with spontaneous resolution in 6–18 months (CDC, 2023). However, treatment accelerates recovery, reduces transmission, and prevents scarring—particularly crucial for facial lesions (van der Wouden et al., 2017). The mother's initial refusal of treatment reflects cultural hesitancy observed in Ali et al. (2021), where 40% of caregivers perceived MC as “harmless” despite its transmissibility (Ali et al., 2021). Clinicians must address misconceptions empathetically. Delayed care increases transmission risks, highlighting the need for culturally sensitive counseling (Braue et al., 2005).

IV. CONCLUSION AND SUGGESTION

A. Conclusion

MC is a benign yet contagious infection requiring timely diagnosis and family-centered care. This case underscores the role of topical therapies such as cantharidin and hygiene education in curbing transmission. Clinicians should emphasize avoiding shared items and early treatment to reduce household spread.

B. Suggestion

There is still limited discussion in this research. A more comprehensive study of obesity in patient with molluscum contagiosum is needed as a suggestion for future authors.

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