

Management of Primary Herpetic Gingivostomatitis in Children: Case Report

Taufiqi Hidayatullah¹ Yuli Fatzia Ossa²

¹Department of Pediatric Dentistry, Faculty of Dentistry, Universitas Syiah Kuala, Banda Aceh, Aceh Indonesia

²Department of Oral Medicine, Faculty of Dentistry, Universitas Syiah Kuala, Banda Aceh, Aceh Indonesia

Corresponding: e-mail: taupq.drg@usk.ac.id

ARTICLE INFO : Received, February 10, 2023; Revised, March 17, 2023; Accepted, June 2, 2023; Published June 20, 2023
ORCID : Hidayatullah T (0000-0002-5353-6066); Ossa YF (0000-0003-4231-5433)
DOI : [10.24815/jds.v8i1.33477](https://doi.org/10.24815/jds.v8i1.33477)

ABSTRACT

Background: Primary herpetic gingivostomatitis is a common condition of oral disease in children. Lesions are generally found on the mucous lips, tongue, cheeks, even on the palatal mucosa. Primary herpetic gingivostomatitis is triggered by infection with Herpes Simplex Virus (HSV) type 1. The diagnosis and treatment of this oral disease are often wrong because proper history is not explored and treatment seems successful due to the self-limiting nature of this lesion. **Objective:** This paper reports 2 cases of gingivostomatitis in different children, with the same diagnosis but different treatment. **Materials and Methods:** There were 2 cases, a 12-year-old and 10 year-old boy comes with his parents to the dentist, then introduces the patient to the case and performs a clinical examination followed by anamnesis and diagnosis. The examination results lead to a similar diagnosis but the clinical signs and treatment are slightly different. **Results:** Accurate history and clinical examination are necessary for appropriate therapy. In these two cases, one child only received palliative care and the other required supportive care. Education about viral transmission to parents is one of the keys to successful treatment. **Conclusion:** Primary herpetic gingivostomatitis affects youngsters. Vesicles and mouth ulcerations may precede this virus-caused sickness. Clinical factors and patient needs determine causal, symptomatic, palliative, and supportive therapy for this instance.

Keywords: HSV type 1, Oral lesions, Primary herpetic gingivostomatitis

ABSTRAK

Pendahuluan: Gingivostomatitis herpetika primer merupakan suatu kondisi penyakit mulut pada anak yang sering dijumpai. Lesi umumnya dijumpai pada mukosa bibir, lidah, pipi, bahkan pada mukosa palatum. Gingivostomatitis herpetika primer dipicu oleh infeksi Herpes Simplex Virus (HSV) tipe 1. Penegakan diagnosis dan terapi penyakit mulut ini seringkali salah karena tidak tergalinya anamnesis dengan baik dan perawatan terkesan berhasil karena sifat lesi ini *self-limiting*. **Tujuan:** Tulisan ini melaporkan 2 kasus gingivostomatitis pada anak yang berbeda, dengan diagnosis sama tetapi tatalaksana perawatannya berbeda. **Materi dan Metode:** Terdapat dua kasus yaitu pada anak laki-laki berusia 12 tahun dan 10 tahun datang bersama orangtuanya ke dokter gigi, selanjutnya dilakukan pengenalan pasien dengan kasusnya dan dilakukan pemeriksaan klinis selanjutnya dilakukan anamnesis dan diagnosa. Hasil pemeriksaan mengarah pada diagnosis yang serupa tetapi tanda klinis dan pengobatan yang dilakukan sedikit berbeda. **Hasil:** Anamnesis dan pemeriksaan klinis yang akurat diperlukan untuk pemberian terapi yang tepat. Pada dua kasus ini, satu anak hanya mendapatkan perawatan paliatif dan satu kasus lainnya memerlukan perawatan suportif. Edukasi mengenai transmisi virus kepada orangtua merupakan salah satu kunci keberhasilan perawatan. **Tujuan:** Primary herpetic gingivostomatitis affects youngsters. Vesicles and mouth ulcerations may precede this virus-caused sickness. Clinical factors and patient needs determine causal, symptomatic, palliative, and supportive therapy for this instance.

Kata kunci: Gingivostomatitis herpetika primer; HSV tipe 1; Lesi oral

1. Introduction

Primary herpetic gingivostomatitis (PHG) is caused by infection with the Herpes Simplex Virus (HSV). HSV is a virus from the Human Herpes Virus family, classified into 2 types of HSV, namely HSV 1 and HSV 2. GHP is most often caused by HSV type 1 virus and occurs in children and young adults.¹ The prevalence of type 1 HSV infection in the world, based on the Centers for Disease Control (CDC) is about 85-90% of the world's population. HSV is a virus from the Human Herpes Virus family, which consists of several types, including HSV-1 and HSV-2. HSV-1 is usually associated with infections of the mouth and face, such as oral herpes, while HSV-2 is more commonly associated with infections of the genital area.²

PHG is one of the manifestations of HSV-1 infection, characterized by sores and sores on the gums, mouth, lips, and surrounding areas. This condition is most common in childhood and young adulthood because these populations are not immune to this virus.³ The prevalence of HSV-1 infection is quite high worldwide. Based on data from the Centers for Disease Control and Prevention (CDC), the prevalence of HSV-1 infection is estimated at 85-90% of the world's population. This high number indicates that most people have been infected with HSV-1, although not all experience the same symptoms as PHG.⁴

The significance of this high prevalence of HSV-1 infection is that potentially many people may experience PHG or other symptoms of HSV-1. It is important to recognize and understand this condition to provide the right treatment and prevent further spread of the infection.⁵ In addition, because HSV-1 can cause other clinical symptoms such as herpes labialis (cold sores) and genital infections, awareness of these infections is also important to reduce the spread of the virus from individual to individual.⁶

Prevention and management of HSV-1 infection, including PHG, involves understanding how it is transmitted, using hygiene measures, and using antiviral drugs to reduce the duration and severity of the infection.³ If you or someone you know has suspicious symptoms of HSV-1 infection, it is best to consult a medical professional immediately for proper diagnosis and treatment.⁷ Clinical symptoms of HSV infection in children can be non-specific infections accompanied by systemic symptoms such as fever, headache, discomfort, difficulty eating, and weakness. Nonetheless, HSV virus infection is a self-limiting disease.⁸ This case report describes 2 cases of primary herpetic gingivostomatitis in children with different management between these cases.

2. Material and Methods

2.1. Case 1

A 12-year-old boy came with his parents to the dentist complaining of many canker sores in his mouth. The child has a fever (39 degrees Celsius) that has been going on for 1 week, and the temperature fluctuates. The child began to have difficulty eating 3 days ago, accompanied by a hot mouth and difficulty opening the mouth. In addition, children lose their appetite, often drool, and have bad breath. The child looks weak from not eating and drinking enough. Canker sores in the mouth began to be noticed 5 days ago. Parents inform that since there is a wound in the mouth, apply nystatin ointment and consume antibiotics (amoxicillin) independently at home.

2.2. Case 2

On May 20, 2020, a 10-year-old boy came with his parents to the dentist, complaining of difficulty opening his mouth for fear of pain. About 7 days ago, the parents informed them that there were many sores in the mouth and the child had a fever of up to 38-39 degrees Celsius. In the first three days, there were wounds, the child had difficulty eating and drinking and said his mouth felt hot and sore. You can eat and drink the next day, but the child is still worried about getting sick. Parents apply nystatin ointment independently and routinely 2 times a day because they suspect the wound is a fungus.

3. Result and Discussion

In the first case, Extraoral examination, palpable cervical lymph nodes, and fever temperature. Intra-oral assessment of multiple ulcerated lesions on the dorsal anterior tongue, ventral tongue, right buccal mucosa, upper labial, soft palate, and gingiva modum hyperemia (Figure 1). The working diagnosis is primary herpetic gingivostomatitis from the history and clinical appearance. The patient was then given acyclovir tablets 200 mg 4 times daily for five days. The patient was prescribed an aloclair gargle 3 times a day, as much as 10 ml, and was forbidden to eat and drink 30 minutes after gargling. The patient's parents were also instructed to give their children high-protein foods, maintain fluid intake to avoid dehydration and wash their hands diligently to prevent the infection from worsening. In addition, the patient was prescribed a multivitamin consumed once daily. The patient was then followed up again on day 4, and there were no subjective complaints. The lesions in the oral cavity had healed (Figure 2).

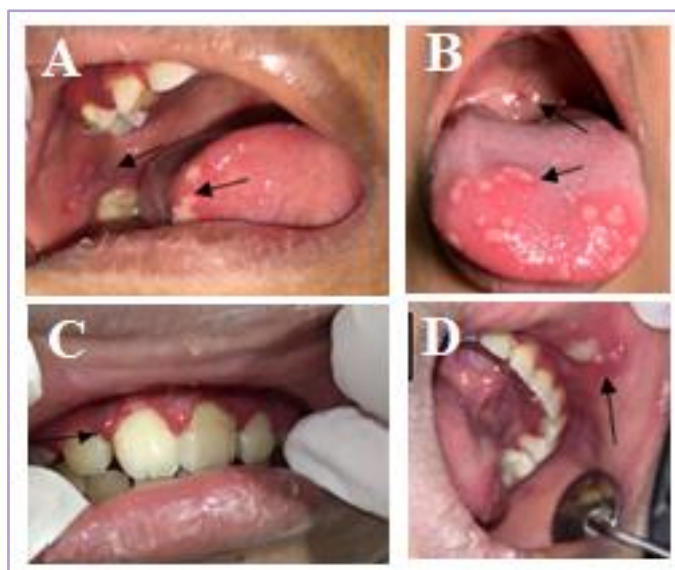


Figure 1. Clinical photos at visit 1(1st case). A: Multiple ulcers on the labial and ventral mucosa of the tongue, B: Multiple ulcers on the soft palate and dorsal tongue, C: Gingival erythema, D: Irregular ulcers on the upper labial mucosa (arrows)



Figure 2. Clinical photo at visit 2 (1st case). It can be seen that the lesion on the mucosa has healed.

Primary herpetic gingivostomatitis most often occurs in childhood, with an incidence of 13-30%. This condition can be preceded by prodromal symptoms, namely fever, sweating, chills, headaches, enlarged lymph nodes, pain in the oral cavity, weakness, nausea, and loss of appetite in children.⁹ After prodromal symptoms, multiple lesions appear intra-oral with a lesion diameter of 2-3 mm, and there may also be crusts in the vermillion area of the lips. These lesions can heal without the appearance of scarring within 7-10 days.¹⁰ In this case report, both patients had prodromal symptoms, namely fever and pain when opening their mouths caused by the appearance of multiple ulcerated lesions. Primary herpetic gingivostomatitis is most often caused by HSV type 1 but can also be caused by HSV type. ¹¹ Clinical symptoms of primary herpetic gingivostomatitis in children are often the only sign of HSV infection. Sometimes the prodromal symptoms can be so mild (or even absent) that the patient cannot recognize the signs and symptoms. Only 10-20% of cases of Primary herpetic gingivostomatitis occur in children with severe symptoms, so parents know these signs and symptoms. 6 In both cases reported, the signs and symptoms were severe enough to be of immediate concern to the patient's parents.¹²

In the second case, extraoral examination showed crusts on the lower lip and dry desquamation of the upper lip. Intraoral examination showed gingival edema, hyperemia and, bleeding to the touch, irregular ulcerated lesions on the right palatal gingiva (Figure 3). Based on the history and clinical examination results, the diagnosis was made in the form of herpetic gingivostomatitis. The therapy given is only comforting to relieve pain with the consideration that the child can eat and drink and the lesions have reduced. Patients are prescribed multivitamins (vitamin B12), which are consumed daily, paracetamol, and alloclair mouthwash 3x a day. They are educated on consuming foods high in protein 5 days later, and parents are informed if the wound in

the mouth is no longer there and the child feels no pain. Due to the pandemic, patients do not return and only inform via telephone. Patients also do not send photos of the latest conditions.



Figure 3. Clinical photos at visit 1(2nd case). A: Multiple ulcers on the palatal mucosa, B: Erythema on the surface of the lips, C: Gingival erythema, D: Erythema on the surface of gingival (arrows)

The pathogenesis of Primary herpetic gingivostomatitis infection begins with the entry of the HSV virus, which can occur through salivary droplets. The virus then enters the epithelial cells' cytoplasm and replicates (multiplies itself), which causes the cells to lyse and damage the mucosal tissue. This causes the appearance of vesicular lesions, which can occur on the lips and oral mucosa.¹³ Then these lesions can rupture, causing new lesions in the form of hemorrhagic crusts on the lips and ulcerated lesions in the oral mucosa. When the immune system has been formed, the HSV virus defends itself from attacks by the immune system by entering the sensory and autonomic nerve ganglia intra-axonally to the ganglionic nerve bodies in the trigeminal ganglia and the virus persists (latent) in the trigeminal ganglion.¹⁴ The virus can reactivate itself (reactivation) if the body's immune condition is weakened by forming new infections in the form of herpes labialis and recurrent intraoral herpes.¹⁵

In the oral cavity, the lesion may be preceded by vesicles which coalesce and then rupture to form new lesions in the form of ulcerations with pain.¹⁶ The gingiva is also edematous and tends to bleed. Lesions may occur on the buccal mucosa, vermillion, hard palate, and tongue. This condition can cause children to refuse to eat, drink, and breathe badly.¹⁷ Diagnosis of Primary herpetic gingivostomatitis cases can be based on the history and clinical appearance of the lesions. The presence of prodromal symptoms can be an early indicator of viral infection. This condition was also seen in both of these reported cases.⁶

Hand-foot-and-mouth disease (HFMD) and the herpetiform type of aphthous stomatitis are frequently diagnosed in the differential diagnosis of Primary herpetic gingivostomatitis lesions.¹⁸ HFMD is characterized by lesions in the mouth and skin caused by Coxsackievirus, echovirus, and other enteroviruses. Skin lesions on the hands and feet are found in vesicles, papules, and macules, which are spread over the surface and do not itch. Oral lesions are generally multiple lesions that are often found on the mucosa of the cheeks and tongue.¹⁹ The lesions begin as pink macules and papules measuring 5–10 mm and later progress to vesicles with erythema. This is different from Primary herpetic gingivostomatitis, which does not have skin lesions. HFMD generally begins with the same prodromal symptoms as PHG. Painful and recurrent ulcers characterize recurrent aphthous stomatitis (RAS).²⁰

Genetic, mechanical trauma, vitamin deficiencies, stress, food allergies, microbial factors, anxiety, hormonal and systemic diseases are Predisposing factors for RAS. Based on the clinical

picture, herpetiform RAS is the least common in the population, with a 5-10% prevalence.²¹ The clinical picture of herpetiform stomatitis is multiple ulcer lesions consisting of 5 to 100 ulcers with a diameter of between 2-3 mm, which are small, irregular, round, and cause excruciating pain. Prodromal symptoms do not precede herpetiform stomatitis. Herpetiform stomatitis lesions are all over the oral mucosa, especially the tongue and labial mucosa.²² Non-infectious lesions such as Primary herpetic gingivostomatitis, no vesicular lesions, and no gingivitis marginalis. GHP treatment can be in the form of causative, symptomatic, soothing, and also supportive therapy. In this case report, the patient's parents initially gave nystatin and amoxicillin.²³ Nystatin is a polyene-class antifungal drug not indicated for therapy for viral infections. Likewise, broad-spectrum antibiotics are not needed in the treatment of Primary herpetic gingivostomatitis lesions. The causative therapy for Primary herpetic gingivostomatitis is to give an antiviral drug (acyclovir) to inhibit the HSV virus replication process.²⁴ Acyclovir works by inhibiting viral DNA polymerization so that replication does not occur. The dose given starts from 200-400 mg 5x a day. Giving acyclovir can be started within 72-96 hours from the onset of symptoms to reduce the duration of fever and ulcerous lesions in the oral cavity.²⁵

In the case reported the parents of two patients administered nystatin and amoxicillin. Both of these therapies are wrong because they are not effective. Nystatin is for fungal conditions, while amoxicillin is for bacterial infections.²⁶ Primary herpetic gingivostomatitis is not a fungal or bacterial infection. Even so, many patients or ordinary people still think that if a white or clear lesion or wound appears, it is a fungus. In addition, there is still a perception that the disease will be cured if you take antibiotics. In these two patients, the reason for giving nystatin and amoxicillin was because of suggestions from other people who had similar experiences.²⁷ There is a possibility that if antifungal or antibacterial drugs are given, the Primary herpetic gingivostomatitis lesions will appear to be healing because, basically, these lesions can heal on their own.²⁸

In this case only the first patient was given the acyclovir because when the patient arrived, the patient still experienced prodromal symptoms such as fever. In contrast, the administration of acyclovir was no longer carried out for the patient in the second case. After all, the second patient came on day 4 and was not accompanied by symptoms prodromal. Supportive and palliative care for patients with Primary herpetic gingivostomatitis includes providing analgesics such as paracetamol, ibuprofen, and topical analgesia. In these two cases, symptomatic hyaluronic acid treatment was given in the form of Aloclair plus oral rinse. This drug aims to reduce pain because it can create a barrier on the lesion's surface, thereby protecting the lesion from contact of other materials with the peripheral nerves in the lesion and accelerating the healing process of the oral mucosal tissue. Aloclair contains several aloe vera plant extracts, sodium hyaluronate, Glychyrretinic acid, and polyvinyl pyrrolidone. Each ingredient functions to heal wounds, reduce pain and prevent infection, moisturize and help healing, reduce swelling and pain, and form wound protectors.²⁹

Patients are also instructed to provide adequate fluids to prevent dehydration in children, instructions for a high-protein and high-calorie diet, and proper rest.³⁰ Patients with Primary herpetic gingivostomatitis are also emphasized to always maintain oral hygiene by continuing to brush their teeth. This can prevent the severity of the symptoms caused. In addition, the patient's parents must also be educated to avoid infection transmission to other family members. This can be done by educating parents so that children frequently wash their hands after contact with ulcer lesions in the oral cavity and separating cutlery because salivary secretions are a medium for transmitting Primary herpetic gingivostomatitis infection.

4. Conclusion

Primary herpetic gingivostomatitis is a condition that often occurs in children. A virus causes this disease and may be preceded by prodromal symptoms, the appearance of blisters, and ulcerated lesions in the oral cavity. This case can be managed causatively symptomatic, comforting and supportive therapy according to clinical conditions and patient needs.

5. References

- George AK, Anil S. Acute herpetic gingivostomatitis associated with herpes simplex virus 2: report of a case. *J Int Oral Health* 2014;6(3):99-102.
- Anzivino E, Fioriti D, Mischitelli M, et al. Herpes simplex virus infection in pregnancy and in neonate: status of art of epidemiology, diagnosis, therapy and prevention. *Virology journal* 2009;6(1):1-11.
- Fatahzadeh M, Schwartz RA. Human herpes simplex virus infections: epidemiology, pathogenesis, symptomatology, diagnosis, and management. *Journal of the American Academy of Dermatology* 2007;57(5):737-63.
- Da Ros CT, da Silva Schmitt C. Global epidemiology of sexually transmitted diseases. *Asian journal of andrology* 2008;10(1):110-14.
- Simmons A. Clinical manifestations and treatment considerations of herpes simplex virus infection. *The Journal of infectious diseases* 2002;186(Supplement_1):S71-S77.
- Arduino PG, Porter SR. Herpes Simplex Virus Type 1 infection: overview on relevant clinico-pathological features. *Journal of oral pathology & medicine* 2008;37(2):107-21.
- Harris SA, Harris EA. Herpes simplex virus type 1 and other pathogens are key causative factors in sporadic Alzheimer's disease. *Journal of Alzheimer's Disease* 2015;48(2):319-53.
- Xu X, Zhang Y, Li Q. Characteristics of herpes simplex virus infection and pathogenesis suggest a strategy for vaccine development. *Reviews in medical virology* 2019;29(4):e2054.
- Huang C-W, Hsieh C-H, Lin M-R, Huang Y-C. Clinical features of gingivostomatitis due to primary infection of herpes simplex virus in children. *BMC Infectious Diseases* 2020;20:1-9.
- Neville BW, Damm DD, Allen CM, Bouquot JE. *Text book of oral and maxillofacial pathology*. :: Elsevier; 2009. p. 692.
- Bardellini E, Amadori F, Veneri F, et al. Adolescents and primary herpetic gingivostomatitis: an Italian overview. *Irish Journal of Medical Science (1971-)* 2022;191(2):801-05.
- Bardellini E, Amadori F, Veneri F, et al. Adolescents and primary herpetic gingivostomatitis: an Italian overview. *Ir J Med Sci* 2022;191(2):801-05.
- en un Paciente GHP. Primary herpetic gingivostomatitis in an adult patient using an orthodontic appliance. *Int. J. Odontostomat* 2010;4(2):157-60.
- Gupta R, Ranjan P, Gupta I, Das N. Primary Herpetic Gingivostomatitis in an Adult Patient: A Case Report. *Rama Univ J Dent Sci* 2017;4(2):30-33.
- Simoons-Smit A, Kraan E, Beishuizen A, van Schijndel RS, Vandenbroucke-Grauls C. Herpes simplex virus type 1 and respiratory disease in critically-ill patients: real pathogen or innocent bystander? *Clinical microbiology and infection* 2006;12(11):1050-59.
- Fitzpatrick SG, Cohen DM, Clark AN. Ulcerated lesions of the oral mucosa: clinical and histologic review. *Head and neck pathology* 2019;13:91-102.
- Noonan V, Lerman MA, Woo S-B, Kabani S. Acute primary herpetic gingivostomatitis. *Journal of the Massachusetts Dental Society* 2014;63(2):51-51.
- Ooi MH. Human enterovirus 71 infection in Sarawak, Malaysia [University of Liverpool; 2011.
- Rao R, Hegde S, Suvarna R, Babu S. Hand foot and mouth disease: a case report from india. *J Cranio-Maxillary Dis* 2013;2(1):75-8.
- Drago F, Ciccarese G, Merlo G, et al. Oral and cutaneous manifestations of viral and bacterial infections: Not only COVID-19 disease. *Clin Dermatol* 2021;39(3):384-404.
- Sharma D, Garg R. A comprehensive review on aphthous stomatitis, its types, management and treatment available. *J Dev Drugs* 2018;7(2):1-8.
- Tarakji B, Gazal G, Al-Maweri SA, Azzeghaiby SN, Alaizari N. Guideline for the diagnosis and treatment of recurrent aphthous stomatitis for dental practitioners. *J Int Oral Health* 2015;7(5):74-80.
- Huang CW, Hsieh CH, Lin MR, Huang YC. Clinical features of gingivostomatitis due to primary infection of herpes simplex virus in children. *BMC Infect Dis* 2020;20(1):782.
- Faden H. Management of primary herpetic gingivostomatitis in young children. *Pediatr Emerg Care* 2006;22(4):268-9.
- Elion GB. The biochemistry and mechanism of action of acyclovir. *J Antimicrob Chemother* 1983;12 Suppl B:9-17.
- Helovu H, Tunnela E, Ollikainen J, Paunio K. Origins and Recovery from Superinfections and Soft Tissue Necrosis. 2022.
- Barr CE. Practical considerations in the treatment of the HIV-infected patient. *Dental Clinics of North America* 1994;38(3):403-23.
- Siegel MA. Strategies for management of commonly encountered oral mucosal disorders. *Journal of the California Dental Association* 1999;27(3):210-19.

29. Hekmatpou D, Mehrabi F, Rahzani K, Aminiyan A. The Effect of Aloe Vera Clinical Trials on Prevention and Healing of Skin Wound: A Systematic Review. Iran J Med Sci 2019;44(1):1-9.
30. Dorner B, Posthauer ME, Thomas D. The role of nutrition in pressure ulcer prevention and treatment: National Pressure Ulcer Advisory Panel white paper. Advances in skin & wound care 2009;22(5):212-21.

Authors Contribution

Contribution	Hidayatullah T	Ossa YF
Concepts or ideas	√	√
Design	√	√
Definition of intellectual content	√	
Literature search	√	√
Experimental studies	√	
Data acquisition	√	√
Data analysis	√	
Statistical analysis		√
Manuscript preparation	√	√
Manuscript editing	√	√
Manuscript review	√	√



JDS (Journal of Syiah Kuala Dentistry Society) is an Open Access Journal licensed under a Creative Commons Attribution-ShareAlike 4.0 International License. This license authorizes the utilization, replication, modification, distribution, and reproduction of the article in any medium or format, provided that due credit is given to the original Author (s) and the source, a link to the Creative Commons license is provided, and any alterations made to the article are duly indicated.

Citation Format: Hidayatullah T, Ossa YF. Management of primary herpetic gingivostomatitis in children: case report.. J Syiah Kuala Dent Soc. 2023; 8(1): 103-109.

Publisher's Note: The authors of this article assert that all claims made herein are exclusively their own and may not necessarily reflect the views of their respective affiliated institutions or those of the publisher, editors, and reviewers. The publisher does not provide any guarantee or endorsement for any product subject to evaluation in this article or any claim made by its manufacturer.