Use of elastic bandage kinesio taping in control of sialorrhia in a child with cerebral paralysis

Uso da bandagem elástica kinesio taping no controle da sialorréia em uma criança com paralisia cerebral

Valdenia Tavares Sousa[1], Ronney Jorge de Souza Raimundo[1], Carla Chiste Tomazoli Santos[1], Leonardo Gama Alves[1], Ihago Santos Guilherme[2], Iel Marciano de Moraes Filho[3]

Como citar:
Vasconcelos GL, Lourenço LS, Silva RM, Pucci FVC. Use of elastic bandage kinesio taping in control of sialorrhia in a child with cerebral paralysis. REVISA. 2019; 8(3): 329-36. Doi: https://doi.org/10.36239/revisa.v8.n3.p329a336

REVISA

1. Faculdade de Ciências e Educação Sena Aires. Valparaíso de Goiás, Goiás, Brasil.

2. Colégio Sena Aires. Valparaíso de Goiás, Goiás, Brasil.

3. Universidade Paulista, Departamento de Enfermagem. Brasília, Distrito Federal, Brasil

Received: 10/04/2019
Accepted: 10/06/2019

RESUMO

Objetivo: verificar a eficiência do kinesio Taping (KT) no controle da deglutição de saliva e sialorréia em crianças com Paralisia Cerebral (PC) e logo avaliar a melhora da qualidade de vida, a motivação, e a autoestima da criança. **Método:** Trata-se de um relato de caso realizado com uma criança de sete anos do sexo feminino, que faz acompanhamento fisioterapêutico na Clínica Escola de uma Instituição de Ensino Superior (IES), no entorno do Distrito Federal. A responsável pela paciente assinou voluntariamente o Termo de assentimento Livre e Esclarecido (TALE), após o esclarecimento sobre os objetivos do estudo e procedimentos a serem utilizados. A participante apresenta diagnóstico clínico de PC com diplegia espástica e sialorréia crônica. **Resultados**: Foi mantido o tratamento inicial e associado o método o kT, no controle da sialorréia não foi observado nenhuma reação alérgica referente a bandagem pela criança. A criança se adaptou a colocação da fita adesiva KT, e obteve redução de 40% no volume de salivação e logo a redução no número de toalhas usadas por dia para a higienização bucal. No início a média de pontuação para avaliação de frequência da sialorréia foi de 4 pontos. A partir da 2ª aplicação consecutivamente a escala da pontuação obteve uma média de 3 pontos, a mãe também informou que houve uma redução da sialorréia após o uso da bandagem. **Conclusão:** O método KT se mostrou eficaz na melhoria do controle de deglutição de saliva e sialorréia em crianças com PC, com redução do número de toalhas utilizadas por dia, e melhorando assim sua autoestima e qualidade de vida. Podendo ser um importante recurso terapêutico na área da fisioterapia.

Descritores: Paralisia cerebral; Sialorréia; Planos Médicos Alternativos; Avaliação de Tecnologias em Saúde; Reabilitação.

ABSTRACT

Objective: To verify the efficiency of Kinesio Taping (KT) in the control of saliva and sialorrhea swallowing in children with Cerebral Palsy (CP) and then evaluate the improvement of the child's quality of life, motivation and self-esteem. **Method:** This is a case report performed with a seven-year-old female child, who was undergoing physical therapy at the School Clinic of a Higher Education Institution (HEI), around the Federal District. The patient responsible voluntarily signed the Informed Consent Term (TALE), after clarifying the study objectives and procedures to be used. The participant presents clinical diagnosis of CP with spastic diplegia and chronic sialorrhea. **Results:** The initial treatment and the kT method were maintained. In the control of sialorrhea, no allergic reaction related to the bandage was observed for child. She has adapted the placement of the KT tape and achieved a 40% reduction in salivation volume and then a reduction in the number of towels used per day for oral hygiene. In the beginning, the average score for sialorrhea frequency assessment was 4 points. After the second consecutive application, the score scale obtained was 3 points, on average, the mother also reported that there was a reduction in sialorrhea after the use of bandage. **Conclusion:** The KT method was effective in improving the control of swallowing saliva and sialorrhea in children with CP, reducing the number of towels used per day, thus improving their self-esteem and quality of life. It can be an important therapeutic resource in the area of physical therapy.

Descriptors: Cerebral palsy; Sialorrhea; Alternative medical plans; Health technology assessment; Rehabilitation.

ORIGINAL

Introduction

Cerebral palsy (CP) is determined as a set of permanent movement and posture disorders that can cause activity limitations that are attributed to non-progressive brain growth disorders from fetal developmental stages to early childhood.[1] Children with CP constantly show impaired oral motor function that not only affects chewing and / or swallowing, but can also cause sialorrhea.[2,3]

Sialorrhea is characterized by unconscious loss of saliva in the oral cavity and can normally occur in newborn infants up to 24 months of age, but after two years children with natural motor development should be able to perform most activities. No loss of saliva. After four years of age, constant and excess saliva is atypical and often persists in children with neurological disorders including neuromuscular incoordination of swallowing, cerebral palsy and schizophrenia.[4-5]

These episodes present themselves in a very disturbing way for neurological patients as well as their parents or caregivers; to a high risk of social refusal due to frequent dampness, apparent clothing odor, and physical discomfort, these factors displace an increase in specific care that is extremely necessary for these patients.[6]

Problematic saliva is described as occurring in 10 to 37% of children with CP. There are more invasive procedures to improve hypersalivation or sialorrhea, the procedure is characterized by injection of botulinum neurotoxin into the sternal gland, this technique has emerged as a more targeted and effective action, and is a great choice for the treatment of sialorrhea in children with neurological disorders.[7] After the application of botulinum neurotoxin there is an incidence of side effects such as salivary gland atrophy that can lead to absolute reduction of saliva and increase of saliva thickness[8]; dysphagia, which is characterized by difficulty in swallowing fluids and food, and may soon also cause episodes of bronchoaspiration, increasing the likelihood of HAI.

From another point of view, noninvasive approaches can provide long-term efficacy with no adverse effects. Consequently, such modalities should be tested before other treatment options9; One of the non-invasive methods with good results and the Kinesio Taping ® (KT) is characterized by an elastic cotton tape. It has been consolidated over the last 10 years due to its use by high profile athletes including volleyball, soccer and tennis players10-12. In recent years, new applications have emerged in the field of neurology, rheumatology, and urogynecology.[13]

According with Dr. Kenzo Kase, the Kinesio Taping® method provides effectiveness in approximately 3 to 4 days. It can be used in orthopedic treatments or in neuromuscular conditions, depending on the application process. There are many proposed indications for the KT method, which can be used for normalizing muscle function, improving lymph and blood flow, reducing pain, correcting joint misalignment and improving proprioception11. The objective of this study is to verify the efficiency of KT in the control of saliva and

sialorrhea swallowing in children with cerebral palsy and then to evaluate the improvement of the child's quality of life, motivation and self-esteem.[12]

Literature Review

Worldwide, the prevalence of CP is one to five per 1,000 live births and is the most common cause of motor disability in children 4 Children with CP manifest various disorders of posture development and movement. Motor dysfunction of CP is constantly associated with muscle weakness, limitations integrating sensory information received from various receptors throughout the body, lack of muscle coordination, and limitations of balance and postural control.[14-18]

The classification of CP is based on anatomical and clinical aspects, as there are other means of classification taking into account the moment of injury and etiology or symptomatology, characterized by: ataxic, choreoathetic spastics depending on the location and involvement manifested in monoplegia, hemiplegia, diplegia and quadriplegia.[19]

Although children with CP have neuromotor limitations, therapeutic procedures are aimed at improving the quality of the information response by strengthening the body for functional control.[16] The small salivary glands secrete little saliva, however, act on the production of a large amount of mucus. Already the major glands are largely responsible for saliva comprising three pairs of glands symmetrically distributed on both sides of the face. Parotid glands produce more serous salivary water, primarily as a result of stimulation during meals.[17]

There is great difficulty in determining sialorrhea. The child should not realize that it is observed, as this can hinder the unfolding of the research for differential diagnosis, it should be evaluated at times of their daily lives. In addition, there is a need to quantify the frequency and severity of sialorrhea and then measure its impact on the quality of life of children and their caregivers. The severity and impact of sialorrhea can be assessed by objective or subjective methods.[3]

KT had recently been proposed for children with PC, functional recording. The method supports joint function by exerting an effect on muscle function, improving proprioception by normalizing muscle tone, correcting improper position and causing a stimulating effect on skin and receptors.[16]

It was made by Dr. Kenzo Kase in the 1970s in Japan. The Kinesio Taping® method by chance arrived in the United States in the 1990s.[11] He gained recognition at the World Cup after performing at the 2008 Olympic Games held in Beijing, China. According to Dr. Kenzo Kase, the Kinesio Taping® method offers benefits for several days, approximately 3 to 4 days. Can treat orthopedic patients or neuromuscular conditions, dependent on the application process. [18]

Method

This is a case report conducted with a seven-year-old female child, who is undergoing physical therapy at the School Clinic of a Higher Education Institution (HEI), around the Federal District. The patient responsible voluntarily signed the Informed Consent Term (TALE), after clarifying the study objectives and procedures to be used.

The participant presents clinical diagnosis of CP with spastic diplegia and chronic sialorrhea. For the inclusion of the patient in the research it was necessary that she was undergoing physical therapy treatments in the school clinic of the referred IES. The treatment the child was undergoing at the clinic was maintained, and we only included the KT method in the control of sialorrhea.

To achieve the objectives of the studies, the perception of the mother or guardian regarding the social impact of sialorrhea was verified and the number of towels / tissues used during a complete day for oral cavity cleaning was quantified. Before starting the study it was necessary to perform an allergic test on the child by applying a 2.0 x 2.0 rectangular strip of the KT bandage in the cervical region for seven consecutive days, where it was found that the patient had no allergic reaction.

Control of sialorrhea was performed by protocols used in other studies such as to verify the severity and frequency of sialorrhea through two scales. On the frequency scale which is scored from 1 to 4 points, namely: 1 point - do not drool; 2 points - drool occasionally; 3 points - drool often and 4 points - constantly. In the gravity scale there is a score of 1 to 5 points, namely: 1 point - normal; 2 points - light; 3 points - moderate; 4 points - severe and 5 points - deep. In both scales it was explained to the mother and / or guardian point to point and asked that the behavior presented at that moment was scored

Results

Ten applications of the Leukotape k Kinesio bandage were performed on the suprahyoid muscle region (anterior belly of the digastric muscle and myohyoid muscle) in the child participating in the study (see figure 1). Beginning with the child sitting in his wheelchair, the KT was applied to 5.0 x 2.5 rectangular strips, with 50% length stretching at rest. (see figure 2)

Figure 1- Child using side view bandage

Figure 2- Child with the use of bandage applied to the suprahydea lower musculature**.**

KT was applied according to the mounting pattern observed in other articles. The child used the bandage for 5 days with an interval of 2 days of rest. Thus, the child remained for 60 days with the bandage applied in the suprahyoid muscle region (see Figure 2).

Figure 3 - Child without bandage anterior view

Figure 4 - Child without the use of side view bandage.

No allergic reaction regarding the bandage was observed by the child. The child adapted the placement of the KT tape, and obtained a 40% reduction in salivation volume and then a reduction in the number of towels used per day for oral hygiene. In the beginning, the average score for sialorrhea frequency assessment was 4 points. From the second application consecutively the score scale obtained an average of 3.0 points, the mother also reported that there was a reduction in sialorrhea after the use of bandage.

Discussion

The first studies on the use of KT bandaging to improve motor function in children requiring neurorehabilitation were published 8 years ago and reported conflicting results.[19-22] KT is characterized by a high viscosity elastic adhesive tape that allows the skin to breathe, is water resistant and provides constant mechanical / elastic stimulation of the skin, and its effects are transmitted to deeper tissues through mechanoreceptors found in the epidermis. and in the dermis.[23]

Around 10% of children with CP will have significant swallowing disorders, characterized by extraoral food leakage, choking, and sialorrhea. Hundreds of other patients with neurological disorders have dysphagia and oral motor dysfunction of the ability to swallow saliva. [24]

Sialorrhea that occurs in association with neurological disorders is usually understood from impaired swallowing as a result of impaired neuromuscular function. Swallowing neuromuscular activity involves the efficient coordination of various structures, including the oral cavity, pharynx, larynx and esophagus. [24]

Regarding the use of towels for oral hygiene during the day, a significant reduction was observed soon after applying the KT bandage. The mother also reported that when the child was without the bandage the sialorrhea increased more not with the same intensity as before the intervention..

The present study refers to the period when the child had the bandage applied. No follow-up was done after a period of 4 weeks. Thus we cannot say whether the results remained effective.

Studies regarding the use of KT elastic bandage are scarce and recent in the international literature because it is an innovative technique. This paper is an exploratory study in the field of physiotherapy. But it is very important to do other work in this area, especially with different methods of measuring saliva exhaust. These noninvasive methods should be assigned to public health policies to develop comprehensive care that impacts the health and autonomy of people with CP. [22-25]

Conclusion

The KT method proved to be effective in improving sialorrhea, and soon provided an effective improvement in the salivary swallowing process of the child with CP, it reduced the number of sanitizing towels used during a full day, and soon provided an improvement in quality of life of children and families, this method can be seen as an important therapeutic resource in the area of physical therapy.

References

1. Poole M, Simkiss D, Rose A, François-Xavier L. (2018) Anterior or posterior walkers for children with cerebral palsy? A systematic review, Disability and Rehabilitation:AssistiveTechnology.2018;(13):4, 422433, DOI: 10.1080/17483107.2017.1385101

2. Williams S, Whatman C, Hume PA, Sheerin K. Kinesio Taping in Treatment and Prevention of Sports Injuries. A Meta-Analysis of the Evidence for its Effectiveness. Sports Med. 2012; 42(2):153-64.

3. Reddihough D, Erasmus CE, Johnson H, et al: Botulinum toxin assessment, intervention and aftercare for paediatric and adult drooling: international consensus statement. Eur J Neurol 2010;17(suppl 2):109–21.
4. Montgomery J, McCusker S, Lang K,Grosse S, Mace A, Lumley R, Haytham K . Managing children with sialorrhoea (drooling): Experience from the first 301 children in our saliva control clinic. International Journal of Pediatric Otorhinolaryngology.2016; 85 (C): 33–39 DOI:10.1016/j.ijporl.2016.03.010
5. Araújo GJS, Simões RA, Cavalcante MLC, Moraes MRB. A aplicabilidade do recurso kinesio taping® nas lesões desportivas. Revista Pesquisa em Fisioterapia. 2014;4(3):189-19.
6. Osterhues DJ. The use of Kinesio Taping_ in the management of traumatic patella dislocation. A case study. Physiother Theory Pract. 2004; 20:267-270.
7. Aytar A, et al. Initial effects of kinesior taping in patients with patellofemoral pain syndrome: A randomized, doubleblind study. Isokinet Exerc Sci. 2011; 19:135-142.
8. Campolo M, Babu J, Dmochowska K, Scariah S, Varughese J. A comparison of two taping techniques (kinesio and mcconnell) and their effect on anterior knee pain during functional activities. Int J Sports Phys Ther. 2013; 8(2):105- 110.
9. Saavedra-Hernández M, Castro-Sánchez AM, Arroyo-Morales M, Cleland JÁ, Lara-Palomo IC, Fernandez-de-la-Penas C. Short-Term Efects of Kinesio Taping Versus Cervical Thrust Manipulation in Patients With Mechanical Neck Pain: A Randomized Clinical Trial. J Orthop Sports Phys Ther. 2012; 42(8):724-730.
10.Chang H, Chou KY, Lin JJ, Wang CH. Immediate effect of forearm Kinesio taping on maximal grip strength and force sense in healthy collegiate athletes. Phys Ther Sport. 2010; 11(4):122-127.
11. Karatas N, Bicici S, Baltaci G, Caner H. The Effect of KinesioTape Application on Functional Performance in Surgeons Who have MusculoSkeletal Pain after Performing Surgery. Turk Neurosurg. 2012; 22(1):83-89
12. Bicici S, karatas N, Baltaci GB. Effect of athletic taping and kinesiotaping® on measurements of functional performance in basketball players with chronic inversion ankle sprains. Int J Sports Phys Ther. 2012; 7(2):154-166
13. Wong OMH, Cheung RTH, Raymond CT. Isokinetic knee function in healthy subjects with and without Kinesio taping. Phys Ther Sport. 2012; 13:255-258.
14. Mostafavifar M, Wertz J, Borchers J. A Systematic Review of the Effectiveness of Kinesio Taping for Musculoskeletal Injury. Phys Sportsmed. 2012; 40(4):33-40.
15. Kaya E, Zinnuroglu M, Tugcu I. Kinesio taping compared to physical therapy modalities for the treatment of shoulder impingement syndrome. Clin Rheumatol. 2011; 30:201-207.
16. Zanchet MA, Vecchio FBD. Efeito da Kinesio Taping sobre força máxima e resistência de força em padelistas. Fisioter. Mov. 2013; 26(1):15- 121.
17. Fratocchi G, Di Mattia F, Rossi R, Mangone M, Santilli V, Paoloni M. Influence of Kinesio Taping applied over biceps brachii on isokinetic elbow peak torque. A placebo-controlled study in a population of young healthy subjects. J Sci Med Sport. 2013; 16:245-249.
18. Lee J, Yoo W. Treatment of chronic Achilles tendon pain by Kinesio taping in an amateur badminton player. Phys Ther Sport. 2012a; 13:115-119.
19. Akbas E, Atay AO, Yuksel, I. The effects of additional kinesio taping over exercise in the treatment of patellofemoral pain syndrome. Acta Orthop Traumatol Turc. 2011; 45(5):335- 341.
20. Oliveira VMA, Batista LSP, Pitangui ACR, Araújo RC. Efeito do Kinesio Taping na dor e discinesia escapular em atletas com síndrome do impacto do ombro. Rev. dor. 2013; 14(1):27-30.
21. Kalter J, Apeldoorn AT, Ostelo RW, Henschke N, Knol DL, van Tulder MW. Taping patients with clinical signs of subacromial impingement syndrome: the design of arandomized controlled trial. BMC Musculoskelet Disord. 2011; 12(188):1-8.

22. Santos CCT, Miranda CSSP, Silva KJM, et al. SCHIZENCEFALIA - A Bibliographic Review of Clinical Aspects. J Cancer Res. 2018; 1(2); 1-2.
23. Ferreira ACR, Santos CCT, Miranda CSSP, Silva KJM, Lopes VC, Guilherme IS. Síndrome de Prune Belly- relato de caso. Rev. Cient. Sena Aires. 2017; 6(2):134-7.
24. Santos CCT, Miranda CSSP, Silva KJM, Pinto MFP, Costa AS, Moraes-Filho IM. Estresse emocional em famílias de crianças com necessidades especiais- revisão Bibliográfica. Rev Inic Cient Ext. 2018; 1(Esp.2): 247-9.
25. Moraes-Filho IM, Carvalho-Filha FSS, Viana LMM, Guilherme IS, Guido LA. Políticas para o trabalhador em saúde, com foco na enfermagem na atenção básica. REVISA.2019;8(2):112-4.

Correspondent Author:
Iel Marciano de Moraes Filho
Universidade Paulista, Nursing Departament. Square 913, s/nº - Conjunt B - Asa Sul. ZIP: 70390-130. Brasília, Federal District, Brazil.
E-mail: ielfilho@yahoo.com.br