



Warm Compress to Overcome Hyperthermia: A Case Study

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ABSTRACT

Objective: To find out the description of giving warm compresses to treat hyperthermia in An.M with febrile seizures in the Parikesit room of RST Wijayakusuma.

Method: This type of research was qualitative, with a case study design that was described descriptively. In this case study, the subject is An.M with hyperthermia nursing problems in cases of febrile seizures at Wijayakusuma Hospital, Purwokerto. Data collection in the following research was carried out by means of observation, measurement, in-depth interviews or anamnesis (assessment by direct interviews with patients or families), physical examination, and documentation for the same data source.

Result: The results obtained after giving compresses for 3 days the patient's body temperature which was originally 38.5⁰C dropped to 37⁰C.

Conclusion: It was concluded that hyperthermia can be overcome by giving warm compresses, warm compresses cause the body temperature outside to be warm so that the body will interpret that the outside temperature is quite hot, eventually the body will reduce the temperature control in the brain so as not to increase the body temperature, with the outside temperature Warmth will make the peripheral blood vessels in the skin widen and experience vasodilation so that the skin pores will open and facilitate heat dissipation, so there will be changes in temperature. This can be seen from the results of the researcher's evaluation that giving warm compresses can have an impact on decreasing body temperature.

Keywords: hyperthermia, toddler, warm compress

Introduction

Prolonged and repeated seizures can cause serious disorders in the child's brain, febrile seizures are more common in boys than girls (Ismail, 2016). Children who have had a febrile seizure for the first time have a 30-35% chance of having another febrile seizure, there is no

standard for the same fever temperature, and it does not always occur in every fever. An increase in genetic predisposing factors will also increase the risk of recurrence of febrile seizures in children (Hariadi & Arifianto, 2017). The results showed that recurrent febrile seizures were more common in patients with a first febrile seizure at the age of 11-20 months as many as 47.5%, female patients 62.5%, patients with a family history of febrile seizures 72.5% patients without a history of epilepsy. family 97.5% and simple febrile seizures in the first febrile seizure 60% (Yunita & Syarif, 2016).

Febrile seizures are divided into two, namely simple febrile seizures and complex febrile seizures. Children who had a simple febrile seizure did not have an increased risk of death. Complex febrile seizures, which occur before 1 year of age, or are triggered by a temperature <39°C are associated with a twofold mortality rate during the first 2 years after the seizure. Seizures that are more than 15 minutes are thought to usually have a persistent neurological disorder (Pudiastuti, 2011). Body temperature is very influential on the occurrence of febrile seizures because it can increase the body's metabolism so that there is a difference in membrane potential in the brain which eventually releases an electrical charge and spreads throughout the body (Arifuddin, 2016).

Children with febrile seizures, the main nursing problem is Hyperthermia. Hyperthermia is an increase in the core temperature of the human body which usually occurs due to infection, a condition where the brain sets a body temperature above normal, which is above 38°C (Anisa, 2019). Hyperthermia (fever) is a body condition in which the body temperature is above normal limits as a result of an increase in the temperature regulation center in the hypothalamus. Under normal conditions, there is a balance between the production and release of body heat. In abnormal conditions, resulting in an imbalance between heat production and restriction resulting in an irregular increase in body temperature (Sodikin, 2012).

Handling of febrile seizures must be appropriate, about 16% of children will experience a recurrence (recurrence) in the first 24 hours although sometimes it cannot be ascertained, if the child has a fever the most important thing is the effort to lower his body temperature (Depkes RI, 2017). In children with febrile seizures, the main nursing problem is Hyperthermia. Hyperthermia is an increase in the core temperature of the human body which usually occurs due to infection, a condition where the brain sets a body temperature above normal, which is above 38°C (Anisa, 2019). Hyperthermia (fever) is a body condition where the body temperature is above normal limits as a result of an increase in the temperature regulation center in the hypothalamus.

The first appropriate treatment for parents when a child has a febrile seizure is trying to lower the child's body temperature, positioning the child with the child's head tilted, placed in a flat place, away from objects or actions that can harm the child. In addition, actions that must be considered and taken by parents are to maintain a smooth airway in children, such as not putting anything in the mouth and not putting food or medicine in the mouth (IDAI, 2016).

Objective

To find out the description of giving warm compresses to treat hyperthermia in An.M with febrile seizures in the Parikesit room of RST Wijayakusuma.

Method

This type of research is qualitative, with a case study design that is described descriptively. In this case study, the subject is An.M with hyperthermia nursing problems in cases of febrile

seizures at Wijayakusuma Hospital, Purwokerto. Data collection in the following research was carried out by means of observation, measurement, history taking (assessment by direct interviews with patients or families), physical examination, and documentation for the same data source.

Results

The patient with the name An. M who is 2 years 4 months 22 days old and is the eldest of 1 sibling. an. M was born on December 19, 2019 and has his address at Rempoah RT 08 RW 02 Baturaden, An. M is Muslim. an. M was brought to the emergency room at RST Wijayakusuma Purwokerto by his parents on May 10, 2022 with complaints of convulsions at home on May 10, 2022, the seizures occurred approximately 5 times since the morning after that the child was still active as usual, then the child had seizures again around 15.20 WIB for approximately 5 minutes. Because they were worried that the seizures would happen again, An's parents. M took him to the hospital on May 10, 2022 at 17.00 WIB to get treatment.

After being in the ER An. M was given the drug diazepam 3x2 mg, paracetamol, 3x150 mg, ceftriaxone, 2x500 mg, the drug was given iv. After being given the drug, An.M has no seizures. An.M's vital signs while in the ER were temperature 38.90C, pulse 179 beats per minute, RR 28 times per minute, and SPO 91%. an. M was transferred to the Parikesit room on May 10 at 18.30 WIB. In the Parikesit room, a physical examination was carried out with the results that vital signs were 38.6oC temperature, pulse 103 times per minute, body weight 11 kg, body length 80 cm, respiratory rate 22 times per minute and after examining An's body temperature. M 38.60C, pulse 103 times per minute, respiratory rate 22 times per minute.

The results of the physical examination were carried out on May 10, 2022 at 18.30 WIB, the results were obtained from An. M includes composmentis awareness, vital signs temperature 38.6oC, pulse rate 103 times per minute, respiratory rate 22 times per minute. Follow-up examination on An. M underwent a complete blood count on May 10, 2022 with the results of hemoglobin 11.0 g/dL, leukocytes 6210/uL, hematocrit 32.2, erythrocytes 4.3/uL, and platelets 362,000/uL, lymphocytes 52*/uL. From the data obtained, it can be concluded that the nursing diagnosis according to An. M is hyperthermia related to the disease process.

Discussion

Based on case management that has been carried out in accordance with the order of implementation of the nursing process from assessment to evaluation. In this case, there have been several things that need to be discussed in connection with the problems that arise in the theory review, the appointment of nursing diagnoses, action plans or interventions and client responses/problem developments achieved after nursing care actions are carried out. M with Complex Fever Seizure which I managed for three days and I have found one nursing problem. Nursing problems that arise are: Hyperthermia related to the disease process.

Table 1 Comparison of the results of studies in hyperthermic patients with signs of symptoms in theory

No	Theory	Case
1.	Seizure	An. M still had a seizure
2.	Red Skin	Skin An. M feel harm
3.	Skin body temperatured	Ny.N has a fever for 2 days, the temperature is 38.6°C
4.	Skin Temperature	Skin on An. M feels warm

This study was conducted to obtain patient and family data that was used as nursing care data. Primary data collection is better than secondary data, but because the patient is 2 years 4 months 22 days old, the authors collect more secondary data. From the results of the assessment of subjective data, the patient's mother said that while at home the patient had a fever for 2 days, after that he had seizures for ± 5 minutes and defecated $\pm 2x$ with a liquid consistency, fever is a condition of body temperature that increases beyond 37.5°C . Most fevers in children are the result of changes in the heat center (thermoregulation) in the hypothalamus.

From the results of the study, it was found that the child had 2 bowel movements, and was supported by laboratory data, namely an increase due to an infection in the digestive tract that would trigger a febrile seizure. Where is An. M has had a fever for 2 days with about 5 seizures, before An. M's mother said that An.M's mother had a hard time, snacked occasionally, had time to eat ice cream, then An.M was sick on days and nights. M is increasing. The increase in body temperature causes the patient to have febrile seizures.

Fever is a condition of an increase in body temperature above 38°C , fever is a body response or symptom to disease. In a febrile state, an increase in temperature of 1°C will result in an increase in basal metabolism of 10%-15% and oxygen demand will increase by 20%. Children 3 years old brain circulation reaches 65% of the whole body compared to adults who only reach 15%. Therefore, an increase in body temperature in a person can change the balance of neuron cells and in a short time diffusion of potassium ions and sodium ions occurs due to electrical discharges (Lestari, 2016). This is in accordance with the theory that fever that occurs in children with febrile seizures can occur because of an infectious fever. Where infectious fever is a fever caused by the entry of pathogens, such as germs, bacteria, viral or viruses, or other small animals into the body.

The next examination is a physical examination. This physical examination is carried out systematically as a guide for conducting a full body assessment. The examination was carried out by IPPA, based on inspection the results obtained were in good general condition, the skin looked reddish, and the body looked weak. The results of the palpation examination found that the skin felt warm. Percussion measures to determine the state of the lungs the results obtained are normal. Auscultation results obtained vesicular breath sounds. The objective data is temperature 38.6°C , pulse rate 103 times per minute, skin looks reddish, skin feels warm.

According to the Pokja IDKI DPP PPNI Team (2016), Hyperthermia is a state of increasing body temperature above the body's normal range of more than 37°C . Hyperthermia is an increase in body temperature associated with the body's inability to dissipate heat or reduce heat production. Fever is the body's normal response to infection. Infection is the entry of microorganisms into the body, which can be in the form of viruses, bacteria, parasites, or fungi. Fever in children is usually caused by exposure to excessive heat, dehydration or lack of fluids, allergies or due to immune system disorders (Cahyaningrum & Putri, 2017). The major signs and symptoms of hyperthermia include seizures, red skin, tachypnea, body temperature, and skin temperature. Minor major signs and symptoms found in An. M, which is 38.6°C , the skin looks reddish, the skin feels warm. Therefore, the authors assert that the problem of hyperthermia is related to the disease process because when the assessment was carried out, subjective data obtained from the patient's mother said that An.M had a fever for two days and had a seizure 1 hour before being taken to the hospital.

The author prepares a nursing plan with the aim of thermoregulation, after nursing actions for 3×8 hours, it is hoped that the expected hyperthermia will improve with the outcome criteria: Hyperthermia can be reduced. The chosen intervention is management of hyperthermia

including identification of causes of hyperthermia (eg dehydration, exposure to a hot environment, use of an incubator), monitoring body temperature, collaboration in providing fluids, providing information about febrile seizures, providing information on giving warm compresses, recommending increasing rest and drinking. From the act of conducting an assessment of the causes of hyperthermia, the authors obtained data from the patient's mother, the patient's mother said her child 2 days before entering the hospital had difficulty drinking, snacking carelessly, had time to eat ice cream, then the child's mushy, liquid bowel movements were fussy, causing an increase in body temperature. The increase in body temperature causes the patient to have febrile seizures and an action plan appears on An.M as follows: monitor body temperature, give oral fluids, warm compresses, give fluids.

Body temperature is regulated by the hypothalamus. According to Syahir, (2016), explaining that if the body temperature is lower than normal, vasoconstriction occurs to maintain body heat, the adrenal glands will produce epinephrine causing increased metabolism, vasoconstriction, and heat production. When heat production is excessive, the body responds by increasing its temperature. This condition is accompanied by an increase in heart rate and respiratory rate. Finally, vasodilation occurs, the skin looks red, feels warm to the touch.

Dehydration is a complication of hyperthermia in which the amount of fluid loss determines the degree of dehydration, and causes disturbances in thermoregulation in the anterior hypothalamus resulting in fever. Disorders of fluid and electrolyte balance will cause changes in ion concentrations in the extracellular space resulting in an imbalance of ATP ASE membrane potential, diffusion of Na⁺, K⁺ into cells, depolarization of neurons and rapid release of electrical charge through neurotransmitters, causing seizures (Hidayat, 2014). External cooling (applying warm compresses) on the patient's forehead/axillary area. According to the author, doing warm compresses aims to help lower body temperature. According to (Windawati & Alfiyanti, 2020) a warm compress is a warm compress technique placed on the folds of the body that can help the evaporation process or body heat evaporation. Body temperature is warmer than air temperature or water temperature allows heat to be transferred to air molecules through direct contact with the skin surface. A warm compress is an action using a cloth or towel that has been dipped in warm water, which is attached to certain body parts so that it can provide a sense of comfort and lower body temperature. Giving warm compresses gives a physiological reaction in the form of vasodilation of large blood vessels and increases heat evaporation from the skin surface. The anterior hypothalamus signals the sweat glands to release sweat through small channels on the surface of the skin. Sweat will evaporate, so there will be a decrease in body temperature (Potter, 2010). With a warm compress, it causes the body temperature outside to be warm so that the body will interpret that the temperature outside is hot enough, eventually the body will lower the temperature control control in the brain so as not to increase the body temperature, with warm outside temperature it will make the peripheral blood vessels in the skin widen and experience vasodilation. so that the skin pores will open and facilitate heat dissipation, so there will be changes in temperature.

Implementation of nursing that has been running in accordance with the selected intervention, namely monitoring body temperature, pulse, recommending patients to increase fluid intake, collaborative administration of antipyretics (paracetamol injection, diazepam injection). The author recommends giving/increasing fluid intake in order to avoid dehydration in patients because increased body temperature results in loss of body fluids through evaporation and sweat and helps reduce heat, this is because drinking water is an important body cooling element in the hot environment and the water itself needed to prevent dehydration due

to sweat (Sodikin, 2012). In addition, the authors conducted health education about febrile seizures and giving warm compresses for giving warm compresses to the patient's forehead/axillary area. The process of giving a warm compress, the working mechanism of the compress gives the effect of signal distribution to the hypothalamus through sweat and peripheral vasodilation so that the heat transfer process obtained from this warm compress takes place through two processes, namely conduction and evaporation where the heat transfer process through this conduction process starts from the action compressing the child with a washcloth and this evaporation process is obtained by the presence of wiping on the body when rubbing is carried out so that there is a process of evaporation of heat into sweat (Haryani, 2018)

The occurrence of febrile seizures can cause feelings of excessive fear, emotional trauma, and anxiety in parents (Jones 2017). Different levels of parental knowledge can affect the prevention of febrile seizures in children when the child has a high fever (Riandika, 2017). Giving health education about febrile seizures to parents greatly affects the level of anxiety in mothers. The main goal is for parents to be able to apply the problem, be able to understand what they can do. The results of this study can show that there is an effect of education on knowledge that can increase knowledge of patients/families about febrile seizures and how to handle febrile seizures, as well as how to give warm compresses to children who have a fever with a high temperature. So that education is very influential on knowledge and efforts to handle febrile seizures and it is hoped that the patient's family can be carried out optimally (Syarifiah, 2018).

The third day evaluation for hyperthermia nursing problems related to the disease process can be partially resolved with the data obtained that An. M temperature is 36.6°C, the patient looks calmer and no longer fussy. The hyperthermia nursing problem has been resolved and further action after the patient is discharged is expected to comply with the regulations given by the nurse at the hospital, namely by providing information on pharmacological and non-pharmacological actions in reducing hyperthermia in patients so that the patient's parents can apply the information that has been conveyed while in the hospital.

Conclusion

After the author conducted an assessment, determined nursing diagnoses, planning, implementation and evaluation for 3 days in the Hyperthermia Nursing Care of An. M with complex febrile seizures in the Parikesit room of the Wijayakusuma RST Purwokerto, the following conclusions can be drawn:

The author has conducted a study on An. M which was carried out for 3 days starting from May 10, 2022 to May 12, 2022. The steps used by the author in the study were interview, observation, physical examination, and documentation of the results. The nursing diagnosis that emerged was hyperthermia related to the disease process. The author has carried out several nursing plans that are adapted to nursing problems in An. The defined nursing plan is used as a guide in carrying out nursing interventions. The author makes a nursing care plan for patients that includes SLKI and SIKI.

The author applies the interventions that have been identified and applied in nursing actions. In covering each planned intervention, the authors also monitor and record the patient's response to the nursing actions that have been carried out. The author evaluates after carrying out nursing actions in accordance with the nursing action plan, an evaluation is carried out to find out and monitor the success of nursing actions for 3 days hyperthermia associated with febrile seizures has been resolved

Ethical consideration

Research ethics has been carried out by the author at the Health Research Ethics Committee of Harapan Bangsa University with code of ethics No. B LPPM-UHB/802/03//2022 on March 29, 2022

References

1. Afyanti, Yati & Rachmawati, I. N. 2014. (2014). studi kasus. In *Metodologi Penelitian Kualitatif Dalam Riset Keperawatan*. Rajawali Press.
2. Anisa, K. (2019). (2019). Jurnal Ilmiah Ilmu Kesehatan. *Efektifitas Kompres Hangat Untuk Menurunkan Suhu Tubuh Dengan Hipertermia*. <https://doi.org/https://doi.org/10.33485/jiik-wk.v5i2.112>
3. Arifuddin, A. (2016). (2016). kejang demam. *Analisis Faktor Risiko Kejadian Kejang Demam*.
4. Arsyad, 2013. (2013). media pendidikan. In *media pembelajaran*. Rajagrafindo Persada.
5. Ayu, 2015. (2015). Jurnal Ners dan Kebidanan. *Kompres Air Hangat Pada Daerah Aksila Dan Dahi Terhadap Penurunan Suhu Tubuh Pada Pasien Demam*.
6. Dervis, B. (2017). Pengaruh Pendidikan Kesehatan tentang Penatalaksanaan Kejang Demam Anak terhadap Pengetahuan Ibu di RS Roemani &RSI Sultan Agung Semarang. *Journal of Chemical Information and Modeling*, 53(9), 1689–1699.
7. Emy Mulyani, N. E. L. (2020). Efektifitas Tepid Water Sponge Terhadap Penurunan Suhu Tubuh Pada Anak Dengan Masalah Keperawatan Hipertermia. *Jurnal Keperawatan Terpadu*.
8. Erdina Yunita, V., Afdal, A., & Syarif, I. (2016). (2016). Jurnal Kesehatan Andalas. *Gambaran Faktor Yang Berhubungan Dengan Timbulnya Kejang Demam Berulang*. <https://doi.org/https://doi.org/10.25077/jka.v5i3.605>
9. Hariadi & Arifianto, 2017. (2017). N. In *berteman dengan demam*. kata media.
10. Haryani. (2018). pemberian kompres hangat. *Kompres Hangat*.
11. Hidayat, A. A. . (2014. (2014). metedo penelitian. In *Metode penelitian keperawatan dan teknis analisis data*. Salemba Medika.
12. Jitowiyono, 2011. (2011). keperawatan anak. In *Asuhan keperawatan pada anak*. nuha medika.
13. Koziar (2010). (2010). keperawatan. In *Buku Ajar Praktik Keperawatan Klinis* (5th ed.). EGC.
14. Lestari, T. 2016. (2016). kep anak. In *asuhan keperawatan anak*. nuha medika.
15. Maliya. (2017). hipertermi. *Masalah Keperawatan Hipertermi*.
16. Masrurroh, R., Hartini, S., & Astuti, R. (2017. (2017). kompres hangat. *Efektivitas Pemberian Kompres Hangat Di Axilla Dan Di Femoral Terhadap Penurunan Suhu Tubuh Pada Anak Demam*.
17. Mubarak et al., 2015. (n.d.). keperawatan. In *buku ajar keperawatan dasar*. salemba medica.
18. Nursalam, 2015. (2015). keperawatan anak. In *Metodologi ilmu keperawatan* (4th ed.). Salemba Medika.
19. Oda, D. 2013. (2013). proses keperawatan. In *proses keperawatan dan pemeriksaan fisik*. Salemba Medika.
20. Potter, P. (2010). (2010). konsep keperawatan. In *gangguan rasa nyaman*. EGC.
21. PPNI, T. pokja S. (2018). *Standar intervensi keperawatan indonesia*.
22. Pudiastuti, R. D. (2011). (2011). hipertermi. In *waspada penyakit anak*.
23. Rahmasari, V, Lestari, K. 2018. (2018). manajemen terapi. *Kajian Terapi Farmakologis Dan Non Farmakologis*.
24. Rehana. (2021). *KECEMASAN SELAMA HOSPITALISASI PADA ANAK DENGAN DEMAM*

- Politeknik Kesehatan Kemenkes Palembang , Sumatera Selatan , Indonesia (Vol. 1, Issue November). jurnal keperawatan merdeka.*
25. Ridha, 2017. (2017). kejang demam. *Kejang Demam*.
 26. Sodikin. (2012). hipertermi. In *Prinsip Perawatan Demam Pada Anak*. pustaka pelajar.
 27. Sugiyono, 2014. (2014). metedo pengumpulan data. In *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D*. Alfabeta.
 28. Syahir, AhmadJainuri, M. (2016). Pembelajaran Konvensional. *Matedukasia*, III(2), 25–30. https://www.academia.edu/6942550/Pembelajaran_Konvensional. (2017). Tinjauan Pustaka Tinjauan Pustaka. *Convention Center Di Kota Tegal*, 4(80), 4.
 29. Tarwoto dan Wartolah, 2015). (2015). kdm. In *Kebutuhan Dasar Manusia dan Proses Keperawatan* (5th ed.). Salemba Medika.
 30. Tiara Dewi, Muhammad Amir Masruhim, R. S. (2016). kejang demam. *Laboratorium Penelitian Dan Pengembangan FARMAKA TROPIS Fakultas Farmasi Universitas Muallawarman, Samarinda, Kalimantan Timur, April*, 5–24.
 31. TIM Pokja SDKI DPP PPNI. (2017). *Standar Diagnosis Keperawatan Indonesia: Definisi dan Indikator Diagnostik, Edisi 1. Cetakan III Revisi*. (Dewan Pengurus PPNI (ed.)). Dewan Pengurus PPNI.
 32. TIM Pokja SLKI DPP PPNI. (2018). *Standar Luaran Keperawatan Indonesia: Definisi dan Kriteria Hasil Keperawatan, Edisi 1. Cetakan II*. (Dewan Pengurus PPNI (ed.)). Dewan Pengurus PPNI.
 33. Wardiyah, A., Setiawati, & Romayati, U. (2016). Perbandingan Efektifitas Pemberian Kompres Hangat dan Tepid Sponge terhadap Penurunan Suhu Tubuh Anak yang Mengalami Demam di Ruang Alamanda RSUD dr . H . Abdul Moeloek Provinsi Lampung Tahun 2015. *Jurnal Kesehatan Holistik*, 10(1), 36–44.
 34. Widodo DP 2011. (n.d.). kejang demam. In *Penatalaksanaan Kejang Demam*. Ikat Dokter Anak Indonesia.
 35. Windawati, W., & Alfiyanti, D. (2020). Penurunan Hipertermia Pada Pasien Kejang Demam Menggunakan Kompres Hangat. *Ners Muda*, 1(1), 59. <https://doi.org/10.26714/nm.v1i1.5499>
 36. Wowor et al., 2017. (2017). suhu tubuh. *Kompres Hangat*.
 37. Wulandari , D., & Erawati, M. (2016). (2016). keperawatan anak. In *Buku Ajar Keperawatan Anak*. pustaka pelajar.