CASE REPORT

Indonesian Journal of Neurosurgery (*IJN*) 2023, Volume 6, Number 3: 39-41
P-ISSN.2089-1180, E-ISSN.2302-2914

Indonesian Journal of Neurosurgery

Chronic non-traumatic recurrent subdural hematoma in children: A case report

Irfaanstio Akbar Hakim[1*], Ema Shofiana Azkia[2], Nenden Nursyamsi Agustina[3], Aditya Eka Octavian[4]

[1]Medical Doctor, Universitas Islam Indonesia, Indonesia;
[2]Neurosurgeon, Department of Neurosurgery, Prof. Dr. Margono Soekarjo General Hospital, Purwokerto, Indonesia;
[3]Pediatrician, Department of Pediatric, Prof. Dr. Margono Soekarjo General Hospital, Purwokerto, Indonesia;
[4]Medical Doctor, Universitas Jenderal Soedirman, Purwokerto, Indonesia.

*Corresponding author:
Irfaanstio Akbar Hakim;
Medical Doctor, Universitas Islam Indonesia, Indonesia;
irfaanstio13@gmail.com

Received: 2023-07-22
Accepted: 2023-10-29
Published: 2023-12-01

ABSTRACT

Introduction: Chronic subdural hematoma (CSDH) is caused by trauma to the bridging veins. CSDH mainly occurs in the elderly but can happen in children in rare cases. The incidence of CSDH in pediatric and infant population are 20-25/100.000 and 12/100.000. Several etiologies for CSDH in infancy, including birth injury, fever, child abuse, and coagulopathy have been reported. On computed tomography (CT) scan, CSDH appears as a hypodense lesion in subdural space. Certain conditions require burr hole drainage for clot evacuation.

Case presentation: A 13-year-old boy presented with a complaint of chronic headache in the last three months which worsened one day before coming to the hospital. The headache felt like a squeezing sensation and was not relieved with rest. On laboratory examination, we found prolonged prothrombin time (PT) and activated partial thromboplastin time (aPTT). On CT scan, there was CSDH in the right parietooccipital region, acute SDH in the left parietal, and right parasagittal. The patient underwent a burr hole drainage. Two weeks before, the patient came to the emergency department with the same complaint. PT and APTT levels were in the normal range and CSDH in the right frontoparietooccipital region was seen on CT examination. The neurosurgeon decided to perform burr hole drainage. The patient made a good recovery immediately after the surgery and there was no recurrence of his symptoms during the six-month follow-up.

Conclusion: CSDH often happens in the elderly but can occur in children in rare cases. CSDH in children can be caused by fever or bleeding disorders. Spontaneous CSDH in children which recur several times exhibits a poor prognosis. Burr hole drainage is required to remove the clot.

Keywords: chronic subdural hematoma, pediatric, recurrent.
Cite This Article: Hakim, I.A., Azkia, E.S., Agustina, N.N., Octavian, A.E. 2023. Chronic non-traumatic recurrent subdural hematoma in children: A case report. *Indonesian Journal of Neurosurgery* 6(3): 39-41. DOI: 10.15562/ijn.v6i3.243

INTRODUCTION

Chronic subdural hematoma (CSDH) is usually caused by chronic bleeding from veins, generally bridging veins located on the surface of the brain.[1] CSDH mainly occurs in the elderly because of brain atrophy, but it can occur in children in rare cases. CSDH is often preceded by acute SDH. Blood within the subdural space triggers an inflammatory response, and finally disrupts the hemostasis process.[2] CSDH is a blood clot in the capsule that has melted which located in the subdural space.[3] Incidence of SDH in infants is 16.[5] per 100.000, of which 31,7% of cases were acute on-traumatic SDH, 17% due to birth trauma.[4] Several etiologies for bleeding in infancy including vitamin K deficiency[5], child abuse associated with shaken baby syndrome[6,7], birth injury due to the method of delivery[8], and coagulopathy.[9] The coagulopathic patients who did not receive preoperative correction of coagulopathy before SDH evacuation had significantly worse outcomes.[9]

CASE PRESENTATION

A 13-year-old boy presented a complaint of chronic headaches in the last three months, worsening one day before coming to the hospital. The headache feels like it was squeezed and not relieved with rest. On laboratory examination, we found prolonged prothrombin time (PT) and activated partial thromboplastin time (APTT) (Table 1). The hemophilia factor VIII was in the normal range, but factor IX was lower than the normal level (Table 2). On the computed tomography (CT) scan, there was CSDH in the right parietooccipital lobe (Figure 1), acute SDH in the left parietal lobe (Figure 2), and right parasagittal (Figure 3). The patient underwent a burr hole drainage.

Two weeks before, patients came to the hospital with the same complaint. No abnormal laboratory finding was found. On the CT scan, we found chronic SDH in the right frontotemporooccipital region (Figure 4). Burr hole drainage was performed for clot evacuation. History of trauma and consumption of anticoagulant drugs were denied. Since the patient was in elementary school, the patient often has an epistaxis without any apparent reason. After the procedure, the complaints decreased and two days after the procedure the patient was allowed to go home. On the six-month follow-up, the patient made a good recovery and the weight was increased to 51.6 kg with a height of 1.55 meters.

DISCUSSION

Chronic subdural hematoma is the result of chronic bleeding from veins, generally

Table 1. Serial prothrombin time and activated partial thromboplastin time

Day	PT	aPTT
1	27.6	41.1
2	12.3	31.3
3	11.2	26.9

Table 2. Factor VIII and factor IX

Parameter	Result	Normal range
Factor VIII	104.1	50.0 – 186.0
Factor IX	**12.3**	50 – 150

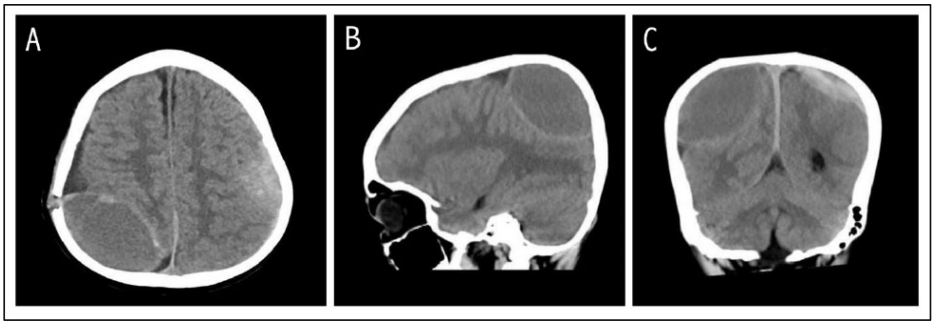

Figure 1. Head computed tomography scan showing chronic subdural hematoma on the right parietooccipital lobe. A: Axial, B: Sagittal, and C: Coronal slice.

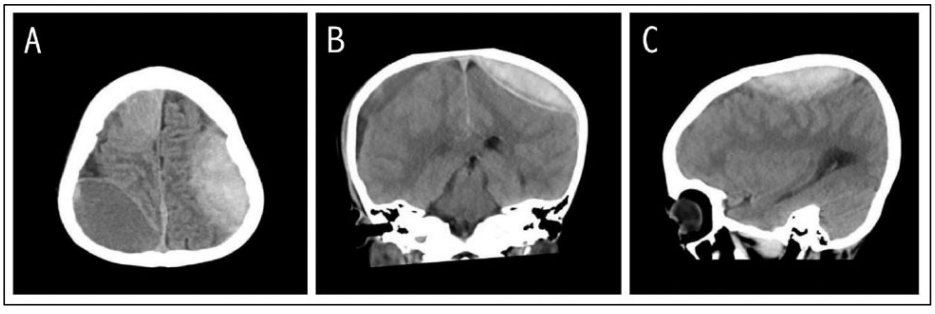

Figure 2. Head computed tomography scan showing acute subdural hematoma on the left parietal lobe. A: Axial, B: Sagittal, and C: Coronal slice.

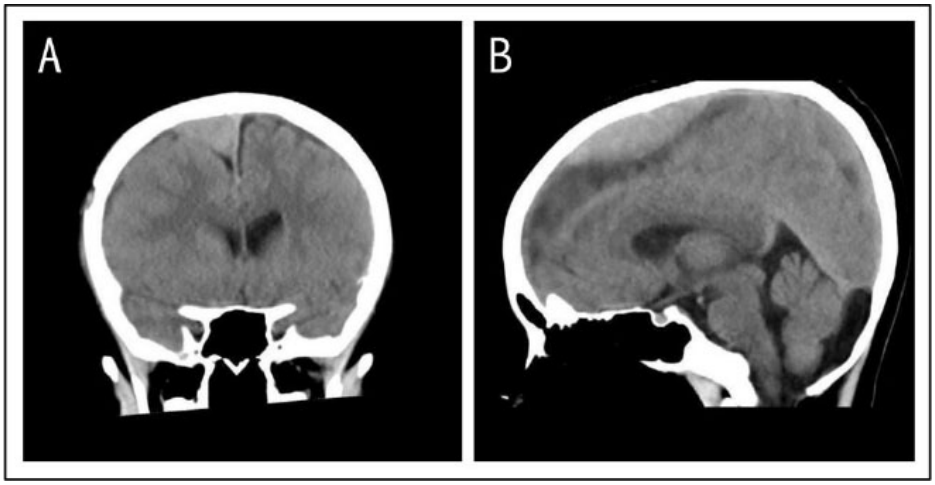

Figure 3. Head computed tomography scan showing acute subdural hematoma on the right parasagittal lobe. A: Coronal, and B: Sagittal slice.

bridging veins located on the surface of the brain.[1] Low factor IX level in these patients indicates that the patient has type b hemophilia, also known as Christmas disease, which mostly affects males, but carrier females may show some signs of bleeding. It has an X-linked recessive inherited mode of inheritance, but some acquired form has also been reported due to the development of autoantibodies toward factor IX. Intracranial hemorrhage represents the most immediately life-threatening condition. It occurs in 1 – 4% of cases with the potential for chronic neurological disability.[10]

The occurrence of fever can also occur due to signaling via the Toll-like receptor cascade, which is an independent process for the cytokine cascade. Hyperthermia inhibits platelet aggregation and may begin to occur at 38°C.[11] The primary treatment of CSDH is burr hole drainage to remove the clot. In a recent randomized placebo-controlled trial, atorvastatin (ATO), a 3-hydroxy-3-methylglutaryl (HMG)-coenzyme A (COA) reductase inhibitor, was shown to be safe and effective in reducing CSDH and improving the neurologic dysfunction of adult patients.[12] Replacement of factor IX and antifibrinolytic agents such as tranexamic acid and epsilon aminocaproic acid can be used as a therapeutic option for acute bleeding of hemophilia B patients.[10]

CONCLUSION

CSDH often happen in the elderly but can occur in children in rare case. CSDH in children can be caused by fever or bleeding disorders including hemophilia. Spontaneous CSDH in children with high recurrence has a poor prognosis. Management for CSDH is generally burr hole drainage to prevent worsening of the clinical symptoms.

CONFLICT OF INTEREST

No conflict of interest to declare.

AUTHOR CONTRIBUTION

Authors took part in the case report, contributed to data collection, participated in writing the manuscript and all agree to accept equal responsibility for the accuracy of the content of this case report.

FUNDING

This case report received no specific funding from any funding agency in the

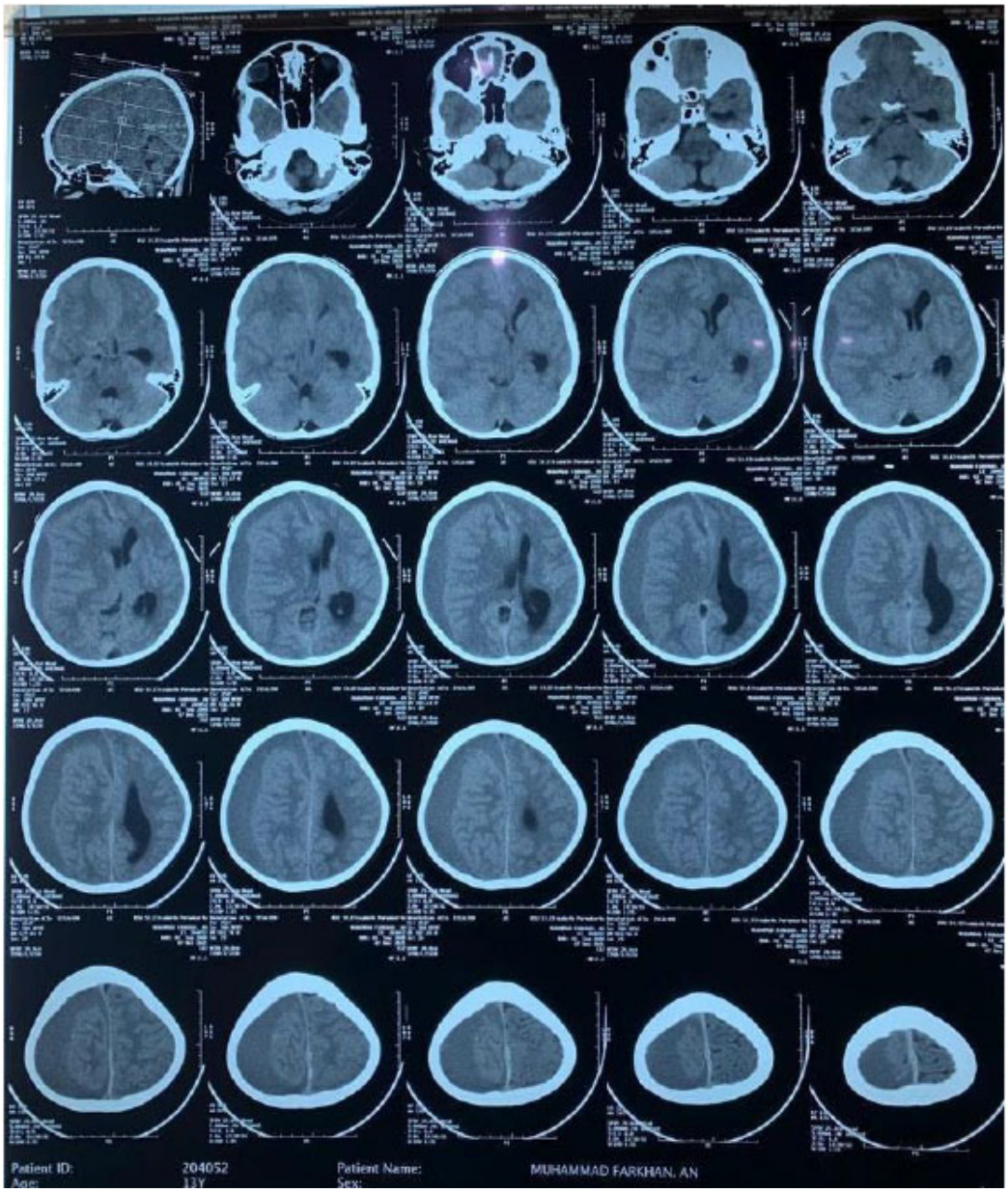

Figure 4. Head computed tomography scan showing chronic subdural hematoma on the right frontoparietooccipital lobe.

public, commercial, or not-for-profit sector.

REFERENCES

1. Nouri A, Gondar R, Schaller K, Meling T. Chronic subdural hematoma (cSDH): A review of the current state of the art. *Brain Spine*. 2021; 1: 100300
2. Greenberg MS. Handbook of Neurosurgery. 9th ed. New York: Thieme; 2020.
3. Adhiyaman V, Asghar M, Ganeshram KN, Bhowmick BK. Chronic subdural haematoma in the elderly. *Postgrad Med J*. 2002; 78(916): 71 – 75.
4. Högberg U, Andersson J, Squier W, Högberg G, Fellman V, Thiblin I, Wester K. Epidemiology of subdural haemorrhage during infancy: A population-based register study. *PLoS One*. 2018; 13(10): e0206340.
5. Araki S, Shirahata A. Vitamin K deficiency bleeding in infancy. *Nutrients*. 2020; 12(3): 780
6. Gabaeff SC. Challenging the pathophysiologic connection between subdural hematoma, retinal hemorrhage and shaken baby syndrome. *West J Emerg Med*. 2011; 12(2): 144 – 158
7. Pierre L, Kondamudi NP. Subdural hematoma. *StatPearls Publishing*. 2022.
8. Rooks VJ, Eaton JP, Ruess L, Petermann GW, Keck-Wherley J, Pedersen RC. Prevalence and evolution of intracranial hemorrhage in asymptomatic term infants. *AJNR Am J Neuroradiol*. 2008; 29(6): 1082 – 1089.
9. Konig SA, Schick U, Dohnert J, Goldammer A, Vitzthum H-E. Coagulopathy and outcome in patients with chronic subdural haematoma. *Acta Neurol Scand*. 2003; 107(2): 110 – 116.
10. Alshaikhli A, Killeen RB, Rokkam VR. Hemophilia B. *StatPearls Publishing*. 2022
11. Walter EJ, Hanna-Jumma S, Carraretto M, Forni L. The pathophysiological basis and consequences of fever. *Crit Care*. 2016; 20: 200.
12. Huang J, Li L, Zhang J, Gao C, Quan W, Tian Y, *et al*. Treatment of relapsed chronic subdural hematoma in four young children with atorvastatin and low-dose dexamethasone. *Pharmacotherapy*. 2019; 39(7): 783 – 789.