Atorvastatin for chronic subdural hematoma

- Clinical study of intracranial hypotension targeted body posture combined with pharmacotherapy in the treatment of chronic subdural hematoma
- Failure Rates of Conservative Management of Minimally Symptomatic Chronic Subdural Hematoma: A Systematic Review and Meta-Analysis
- Chronic subdural hematoma that may be caused by nephrotic syndrome: a case report and literature review
- Endovascular Embolization and Atorvastatin Therapy for Recurrent Chronic Subdural Hematoma
- Investigation of the Efficacy of Bevacizumab Treatment in An Experimental Rat Model of Chronic Subdural Hematoma
- Efficacy and Safety of Atorvastatin for Chronic Subdural Hematoma: An Updated Systematic Review and Meta-Analysis
- Establishment and validation of a CT-based prediction model for the good dissolution of mild chronic subdural hematoma with atorvastatin treatment
- A nomogram for predicting the possibility of effusion deterioration in patients with traumatic subdural effusion

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It is well known that inflammation influences chronic subdural hematoma (CSDH) formation to a large extent. Atorvastatin has pleiotropic effects on restraining inflammation and promoting angiogenesis besides its cholesterol-lowering function. Hence, atorvastatin may induce anti-inflammation effects and facilitate therapeutic effects for subdural hematoma (SDH).

Xu et al. conducted a retrospective study to analyze the clinical data of patients with chronic subdural hematoma. Patients receiving atorvastatin treatment after surgery were divided into the study group while others were divided into the control group. As the primary outcome, we compared the hematoma recurrence rate. The secondary outcomes were the remaining volume of hematoma and the activities of daily living (Barthel index) score at 3 months after discharge. A total of 53 patients were included in the study: 30 patients in the study group (n = 30) and 23 patients in the control group (n = 23). The baseline clinical data were similar in the 2 groups (P > .05). Four patients had a recurrence of hematoma in the study group, while 5 patients had recurrence of hematoma in the control group [4/30 (13.3%) versus 5/23 (21.7%), P = .661] at 3 months after discharge. The mean remaining volume of hematoma was 12.10 ± 8.80 mL in the study group and 17.30 ± 9.50 mL in the control group at 3 months after discharge, respectively. The remaining volume of hematoma in the study group was less than that in the control group (P = .045).The activities of daily living scores in the study group were higher than those in the control group (97.83 ± 4.48 vs 94.78 ± 5.73, P = .034) at 3 months after discharge. Atorvastatin administration after surgery barely reduces the recurrence rate of chronic subdural hematoma, however, reduces the remaining volume of hematoma and improves neurological function [1)].

Atorvastatin treatment may eliminate SDH and improve the neural function of the rats through its anti-inflammatory effects. Hence, it indicated that statin induced inflammatory modulation might play

a significant role in rats [2].

Results of a preliminary prospective study showed that oral administration of atorvastatin is safe and effective in treating CSDH, offering a cost-effective alternative to surgery. A prospective randomized clinical trial is required to validate the effect of atorvastatin [3]. [4].

Jiang et al. reported a clinical research trial protocol that was designed to evaluate the therapeutic effects of atorvastatin on CSDH [5].

Limited evidence suggests that oral atorvastatin may be beneficial in the management of CSDH. Further high-quality studies focused on dosage, duration, hematoma size are needed to further elucidate the role of atorvastatin in the management of CSDH [6].

A retrospective cohort comparison study has shown that CSDH with Atorvastatin had a lower rate of deterioration and burr-hole drainage [7].

The knowledge of the conservative treatment modalities for cSDH is sparse and based on small case series and low grade evidence. However, some treatment modalities seem promising even in symptomatic patients with large haematomas. Randomised controlled trials are currently underway, and will hopefully provide us with good evidence for or against the conservative treatment of cSDH [8].

Retracted articles

Atorvastatin administration may decrease the risks of recurrence.Patients with severe brain atrophy and bilateral CSDH are prone to the recurrence [9] is a retracted article [10].

Effect of atorvastatin on resolution of chronic subdural hematoma: a prospective observational study [RETRACTED] [11].

1)
Xu W, Tang X, Liu S, Li Q, Yang F. Efficacy of atorvastatin administration after surgery in patients with chronic subdural hematoma. Medicine (Baltimore). 2023 Sep 29;102(39):e35379. doi: 10.1097/MD.0000000000035379. PMID: 37773816.
2)
Li T, Wang D, Tian Y, Yu H, Wang Y, Quan W, Cui W, Zhou L, Chen J, Jiang R, Zhang J. Effects of atorvastatin on the inflammation regulation and elimination of subdural hematoma in rats. J Neurol Sci. 2014 Jun 15;341(1-2):88-96. doi: 10.1016/j.jns.2014.04.009. Epub 2014 Apr 13. PubMed PMID: 24774750.
3)
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4)
Xu M, Chen P, Zhu X, Wang C, Shi X, Yu B. Effects of Atorvastatin on Conservative and Surgical

Treatments of Chronic Subdural Hematoma in Patients. World Neurosurg. 2016 Jul;91:23-8. doi: 10.1016/j.wneu.2016.03.067. Epub 2016 Mar 29. PubMed PMID: 27044372.
5)
Jiang R, Wang D, Poon WS, Lu YC, Li XG, Zhao SG, Wang RZ, You C, Yuan XR, Zhang JM, Feng H, Fei Z, Yu XG, Zhao YL, Hu J, Kang DZ, Yu RT, Gao GD, Zhu XD, Sun T, Hao JH, Liu XZ, Su N, Yue SY, Zhang JN. Effect of ATorvastatin On Chronic subdural Hematoma (ATOCH): a study protocol for a randomized controlled trial. Trials. 2015 Nov 18;16:528. doi: 10.1186/s13063-015-1045-y. PubMed PMID: 26581842; PubMed Central PMCID: PMC4652431.
6)
Qiu S, Zhuo W, Sun C, Su Z, Yan A, Shen L. Effects of atorvastatin on chronic subdural hematoma: A systematic review. Medicine (Baltimore). 2017 Jun;96(26):e7290. doi: 10.1097/MD.0000000000007290. Review. PubMed PMID: 28658127; PubMed Central PMCID: PMC5500049.
7)
Chan DY, Chan DT, Sun TF, Ng SC, Wong GK, Poon WS. The use of atorvastatin for chronic subdural haematoma: a retrospective cohort comparison study(). Br J Neurosurg. 2017 Feb;31(1):72-77. doi: 10.1080/02688697.2016.1208806. Epub 2016 Nov 23. PubMed PMID: 27881024.
8)
Soleman J, Noccera F, Mariani L. The conservative and pharmacological management of chronic subdural haematoma. Swiss Med Wkly. 2017 Jan 19;147:w14398. doi: smw.2017.14398. PubMed PMID: 28102879.
9)
Liu H, Luo Z, Liu Z, Yang J, Kan S. Atorvastatin May Attenuate Recurrence of Chronic Subdural Hematoma. Front Neurosci. 2016 Jun 28;10:303. doi: 10.3389/fnins.2016.00303. eCollection 2016. Retraction in: Front Neurosci. 2016 Oct 07;10 :465. PubMed PMID: 27445673; PubMed Central PMCID: PMC4923224.
10)
Frontiers Editorial Office. Retraction: Atorvastatin May Attenuate Recurrence of Chronic Subdural Hematoma. Front Neurosci. 2016 Oct 7;10:465. eCollection 2016. PubMed PMID: 27738420; PubMed Central PMCID: PMC5054353.
11)
Liu H, Liu Z, Liu Y, Kan S, Yang J, Liu H. Effect of atorvastatin on resolution of chronic subdural hematoma: a prospective observational study [RETRACTED]. J Neurosurg. 2016 Jul 29:1-10. doi: 10.3171/2015.12.JNS151991. [Epub ahead of print] Retraction in: J Neurosurg. 2017 Feb;126(2):651. PubMed PMID: 27471887.