The Sum of All Spheres:
Cerebrovascular Accidents in Hereditary Spherocytosis

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BACKGROUND

Cerebrovascular accident (CVA) in patients with Hereditary Spherocytosis (HS) is rarely reported.[1,2] Our case describes a 77-year-old female diagnosed with HS at age 19 who developed multiple multi-lobar infarcts in the last 5 months of her life. Her 60-pack-year smoking history, hypertension, heart failure with preserved EF, and atrial fibrillation (complicated by recurrent GI bleed) likely caused her strokes, but this case provided an opportunity to examine the risk of CVA secondary to HS and/or splenectomy – the common curative treatment of HS.[3]

Case Begins
5 months before Presentation:
First CVA, MRI shows right frontal lobe infarct, no neuro deficits.

3 months before Presentation:
Another CVA. CT shows new hypointensity in the right occipital lobe. With hx of GI bleed, anticoagulation deferred, and she is discharged to rehab on dual antiplatelet therapy.

1 month before Presentation:
At rehab, pt develops left lower extremity DVT and acute GI bleed. Only Clopidogrel continued, IVC filter placed.

On Presentation in ED:
1-week hx of declining appetite and mentation. UA consistent with UTI. Antibiotic therapy initiated.

Hospital Day 0:
CT Head shows multiple areas of encephalomalacia and infarct in left frontal lobe. MRI shows subacute infarction superimposed on numerous chronic bilateral infarctions CXR shows lung mass suspicious for malignancy. Biopsy deferred because of recent stroke.

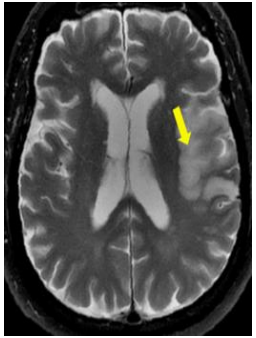
Hospital Day 4:
Seizure-like activity observed, resolves with lorazepam and levetiracetam.

Hospital Day 11:
Pt develops new onset atrial fibrillation, controlled with Diltiazem. Stress testing and Echo within normal limits.

Hospital Day 19:
Pt goes into asystole. ACLS initiated and ROSC achieved after 15 minutes. EEG shows anoxic brain injury.

Case Ends Hospital Day 20:
After goals of care discussion with family, life support was withdrawn, and patient expired.

Characteristic RBC shape in HS.
Image courtesy S Bhimji MD


T2 weighted image of subacute MCA infarct. Radlines.org

DISCUSSION

Was HS responsible for multiple CVA's? A potential mechanism suggested in the first reported cases of HS and CVA is increased RBC aggregation and plasma viscosity (ie "sludging syndrome").[2] Another possible explanation is splenectomy. Although splenectomy can cure symptoms of HS, the loss of the spleen's filtering function may increase coagulabilty and explain the 5.6x greater risk of arteriosclerotic events in HS patients >40 years old compared to those without splenectomy[4].

Currently, extended anticoagulation is not recommended after splenectomy[5], but the risks shown in the literature may warrant further investigation into the utility of anticoagulation in HS patients post-splenectomy[6]. Despite our patient having typical risk factors for CVA, the multiple events raise the suspicion of HS contributing to recurrent CVA.

References
1. Van Hilten JJ, Haan J, Wintzen AR. Cerebral Infarction in Hereditary Spherocytosis. Stroke. AHA. 1989; 20(12): 1-2. **2.** Ramu CS, Raju GB, Rao KS, et al. Uncommon neurological manifestations of hemolytic anemia: A report of two cases. Neurol India 2008;56:201-3. **3.** Mentzer WC. Hereditary spherocytosis. In:Means Jr RT, Tirnauer JS, editors.UptoDate. [Internet]. Waltham, Mass.UptoDate; 7 Jun 2021 [cited 11 Feb 2022].**4.** Rorholt M, Ghanima W, Farkas DK, et al. Risk of cardiovascular events and pulmonary hypertension following splenectomy - a Danish population-based cohort study from 1996-2012. Haematologica. 2017; 102(8): 1333-1341. **5.** Bolton-Maggs PHB, Langer JC, Iolascon A, et al. Guidelines for the diagnosis and management of hereditary spherocytosis - 2011 update. Britis J of Haematology. 2011. 156(1): 37-49. **6.** Pommerening MJ, Rahbar E, Minei K, et al. Splenectomy is associated with hypercoagulable thrombelastrography values and increased risk of thromboembolism. Surgery. 2015; 158(3): 618-26.