

Recurrent choroidal detachment in peritoneal dialysis patient with hypervolemia and dilutional hypoalbuminemia: a case report

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Background

- Choroidal detachment (CD), also known as ciliochoroidal or choroidal effusion, is when fluid is trapped within the suprachoroidal space, separating the choroid from the sclera [1].
- While there are multiple causes of choroidal detachment, one of the more common causes is ocular hypotony, particularly following trabeculectomy. It has been previously reported that choroidal detachment may develop in a patient with hypoalbuminemia [2].
- We present a case of recurrent CD that is correlated to the change in serum albumin level and the patient's fluid status.

Case Presentation

A 71-year-old female patient with a history of end-stage renal disease (ESRD) and receiving continuous ambulatory peritoneal dialysis (CAPD) presented with a 4-day history of blurry vision in her left eye. Her medical history includes primary angle-closure glaucoma in her left eye, which had been treated 6 years ago by trabeculectomy. While this resulted in a low baseline intraocular pressure (IOP) of 2-7 mmHg, she had never developed any hypotony-related complications in the past. After examining the left eye, a 'kissing' CD was diagnosed and successfully treated with transscleral surgical drainage. The patient was also found to have bilateral pitting oedema and hypoalbuminemia.

Two weeks later, the patient presented back with a second episode of kissing CD. This was managed by another transscleral drainage and an autologous blood injection. Despite the IOP remaining at <5 mmHg, the CD started to resolve. As it was suspected that hypervolemia and hypoalbuminemia were the causes of CD, the patient was referred to the nephrology team. Protein supplements were prescribed and the CAPD treatment regimen was altered to achieve a greater daily fluid removal. This resolved pitting oedema and prevented CD from reoccurring.

After two months, owing to inadequate oral fluid intake restriction at home, the patient presented with another episode of near-kissing CD. She underwent an anterior chamber reformation and fluid intake was limited to <700 ml/day. At 12-week follow-up, the patient was clinically stable with a final visual acuity of 20/30, an IOP of 3 mmHg and no recurrence of CD. The serum albumin was slightly improved and there was no sign of hypervolemia.

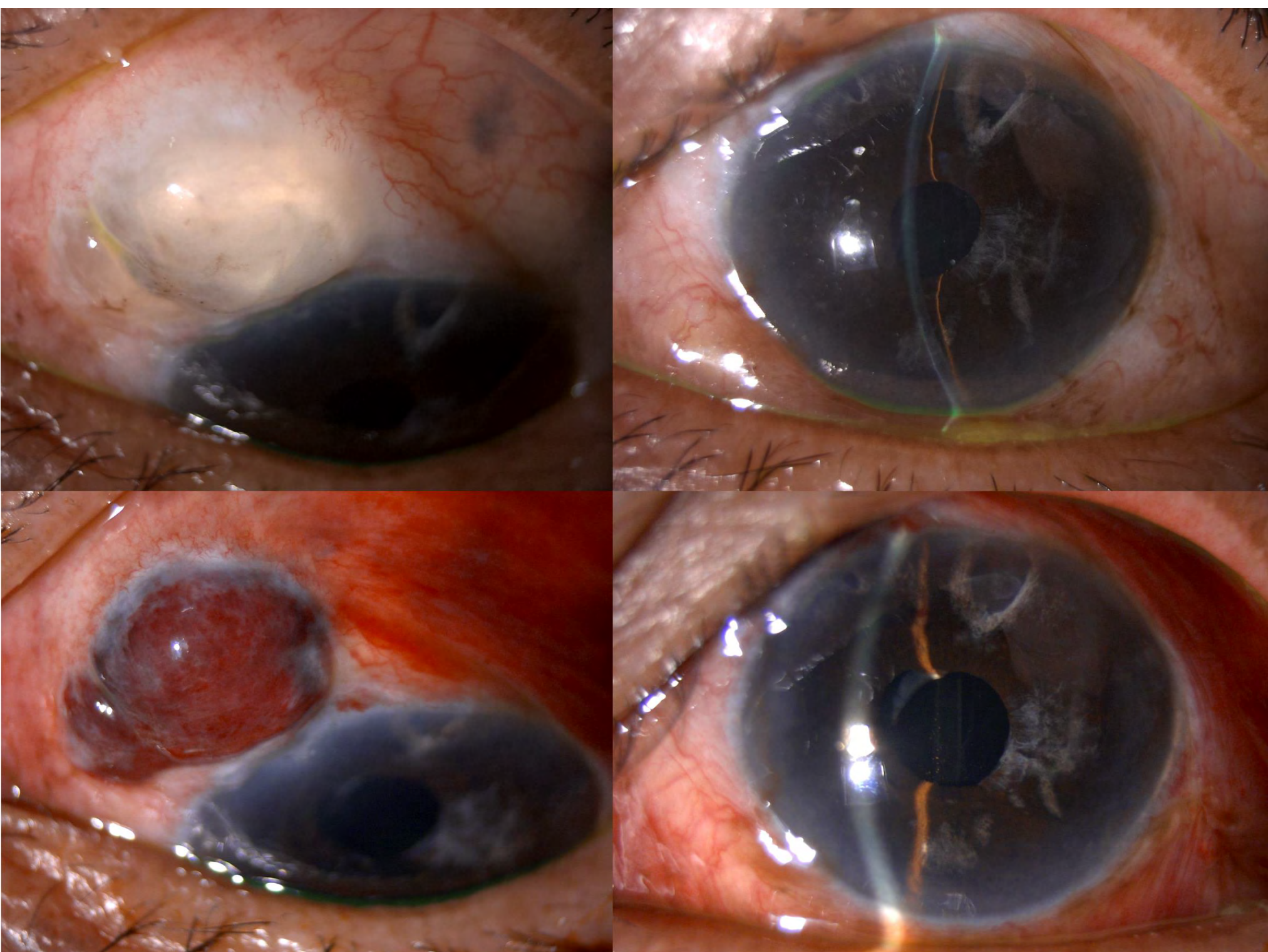


Figure 1: An examination of the patient's left eye. (Upper panel) Examination at first presentation prior to the autologous blood injection showing a large avascular cystic bleb and a grade 1 anterior chamber shallowing. (Lower panel) Examination after the autologous blood injection and second choroidal drainage showing a deepening of the anterior chamber.



Figure 2: B-scan of the patient's left eye, showing a large 'kissing' choroidal detachment.

Conclusion

- Hydrodynamics of the choroid can be elucidated by Starling's Law as this describes how the movement of fluid across capillaries is dependent on the permeability of the capillary, trans-capillary hydrostatic pressure differences, and trans-capillary oncotic pressure differences [3].
- Through Starling's Law, changes in plasma albumin level explain how a shift in the balance of osmotic and hydrostatic gradients between the choroidal capillaries and interstitial space of the eye can lead to effusion.
- The possible aggravating factors for the recurrent episodes in this patient may stem from the dilutional hypoalbuminemia and volume overload after CAPD; where a lower plasma protein level can increase the net driving pressure out of the capillaries and into the interstitial space, leading to the accumulation of fluid in the suprachoroidal space.
- Due to the increase in the patient's weight that correlated with each time the patient presented, hypervolemia was indicated as a contributing factor to the non-nutritional related hypoalbuminemia
- Therefore, practitioners should be aware of the possibility of recurrent CD as a complication in patients with hypoalbuminemia and hypervolemia. To further understand the mechanism behind CD, a relationship between the choroid, IOP, serum albumin level and body fluid status in such patients certainly warrants further research.

References

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