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A CASE REPORT ON SUBDURAL HEMATOMA IN A 60YR OLD MALE PATIENT WITH ESRD

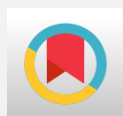
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Abstract

A subdural hematoma occurs when a clot forms between the brain and its outer covering. Chronic dialysis becomes necessary as a treatment to externally filter the blood, when kidneys are no capable of fulfilling this role. This validates that the patients undergoing hemodialysis face a higher risk of developing subdural hematoma. The KDIGO foundation guidelines define the chronic kidney disease using the markers such as the proteinuria and the glomerular filtration rate (GFR). Hemodialysis patient and other type of bleeding tendency are more prone to the spontaneous traumatic subdural hematoma and the intracerebral hematoma. This increased risk is attributed to the elevated mortality rate observed in the dialysis patient affected by the subdural hematoma. Consequently, it becomes imperative to implement the preventive measures aimed at reducing the occurrence of subdural hematoma in the individuals with the end stage renal disease, especially those undergoing the hemodialysis treatment. The high occurrence rate of the subdural hematoma and its recent surge is related to the increased use of anticoagulant in the long-term hemodialysis patient. Hence proper care for the patient is necessary to prevent devastating the disorder. This case report is demonstrating that there is a striking enrichment for the underlying comorbid conditions in the patient who has developed subdural hematoma and has the high risk of the immediate mortality.

Keywords: Subdural hematoma, end stage renal disease, hemodialysis, glomerular filtration rate, mortality, preventive measures.

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Introduction

A subdural hematoma occurs when a clot forms between the brain and its outer covering. This condition can arise from a severe head injury or simply due to the natural aging process, which causes the blood vessels to become thinner and more susceptible to damage. Chronic subdural hematoma (CSDH) is a common disease among the elderly and with increasing incidence we have chosen to focus on associations between development and recurrence of CSDH and anticoagulation and/or antiplatelet agent therapy [1]. End-stage renal disease is the term refers to a state where your kidneys have essentially ceased to perform their vital functions of filtering waste and regulating fluid levels in your body. Consequently, chronic dialysis becomes necessary as a treatment to externally filter your blood when your kidneys are no longer capable of fulfilling this role. In certain cases where an individual is afflicted with both a subdural hematoma and end-stage renal disease, doctors recommended craniotomy [2].

This surgical procedure aims to remove the clot and alleviate the associated complications. However, it is crucial to note that patients with these conditions face heightened mortality rates, particularly if they are taking anticoagulant medications. While these medications prevent clot formation, they also increase the risk of bleeding during surgery or trauma. Therefore, it is of utmost importance to remain aware of these risks and maintain close collaboration with healthcare professionals [3]. The development of the chronic kidney disease and its progression to the end stage renal disease remains as the significant cause of the reduced quality of life and premature mortality. It is an enervating disease, and it involves the standards of medical care involving the monitoring for the signs of the disease progression and referral to the specialist for the dialysis or the renal transplant. The kidney disease improving global outcomes (KDIGO) foundation guidelines defines the chronic kidney disease using the kidney damage markers, specifically such as the proteinuria and the glomerular filtration rate.

According to KDIGO foundation guidelines, CKD is classified into the 5 stages based on the GFR level.

Stage 1: kidney damage with the normal GFR >90ml/min.

Stage 2: mild reduction in the GFR (60-89ml/min)

Stage 3a: moderate reduction in the GFR (45-59ml/min)

Stage 3b: moderate reduction in the GFR (30-44ml/min)

Stage 4: severe reduction in the GFR (15-29ml/min)

Stage 5: renal failure (GFR less than 15ml/min)

Case Study

A 60-yr old male patient admitted in the NICU ward in tertiary care hospital with the chief complaints of vomiting (3episodes) with generalised weakness, fever on/off since 2 days. On interviewing the care taker it was found that he had history of subdural hematoma(SDH), chronic kidney disease(CKD), hypertension (HTN), S/P craniotomy- somatic-sensory evoked potential(SEP) along with this the patient undergoing dialysis for 3 times a week. As per his medical history he was on the following treatment:

Drug Chart:

SL N O:	Drug Name	Indication	Dose	Dosage Form And ROA	Frequency
1	Ondansetron	Vomiting	4mg	Inje- IV	BD
2	Levetiracetam	Seizures	500mg	Inje-IV	BD
3	Paracetamol	Fever	1gm	Inje-IV	SOS
4	Pantoprazole	Acidity	40mg	Inje-IV	OD
5	Phenytoin sodium	Seizures	100mg	Inje-IV	BD
6	Lacosamide	Seizures	100mg	Inje-IV	BD
7	Cerebrolysin	Traumatic brain damage	1amp	Inje-IV	BD
8	Erythropoietin	RBC production	6000 units	Inje-SC	Once a week
9	Fragmin	Blood clots	5000 IU	Inje-IV	Once a week
10	Ketoanalogue	Nutritional supplement	200mg	Tab-P/O	TID
11	Amoxicillin	Bacterial infection	125mg	Tab-P/O	BD
12	clonidine	Hypertension and stroke	10mg	Tab-P/O	OD
13	Mucomix	Respiratory disease with excessive mucus	P/N	Neb-INH	TID

On evaluation, it was found that end stage renal disease patient with the haemodialysis have a high risk of subsequent

subdural hematoma and to have a high mortality risk from the subdural hematoma [4].

Laboratory Investigations

SL NO	INVESTIGATION METHOD	ABNORMAL LEVELS	INDICATION
	Complete Blood Picture		
1	Haemoglobin	5.2gm %	Anaemia
2	Red blood cells (RBCs)	1.84 mil/cu m	Anaemia
3	Packed cell volume(PCV)	14.4%	Anaemia
4	Total WBC count	15,300 / mL	Leucocytosis
5	Neutrophils	15%	Neutropenia
	Renal Functions		
6	Serum creatinine	9.9mg/dl	Chronic kidney disease
7	Glomerular filtration rate:	13ml/min	Kidney dysfunction
	Urine Examination		
8	Albumin	2.9mg/dl	Kidney disease
9	Albumin creatinine ratio	303mg /dl	Macroalbuminuria
	Electrolytes		
10	Sodium	131mmol/L	Hyponatremia

Discussion

Haemodialysis (HD) may increase the risk of acute subdural hematoma (SDH) with high fatality, but the extent of this disease is not clear. The report affirmed the high incidence and mortality of SDH in chronic maintenance dialysis patient particularly in the elderly. The higher incidence can be explained by the several factors [5].

The risk of bleeding is increased by the use of fragmin with dialysis as well as by the concurrent administration of the antiplatelet drug for the cerebrovascular disease [6,7]. Increased risk of bleeding can also be allocated to the uraemia condition, the main cause of the bleeding tendency in the uraemia is due to the impaired platelet function, with markedly reduced kidney function and even anaemia plays a key role in this process. Haemodialysis patient and patient with the other types of the bleeding tendency are more prone to the spontaneous traumatic subdural hematoma and intracerebral hematoma.

Further Rossier et al. found that elderly dialysis patient is at the higher risk compared with the general population. The predisposition is due to the advanced age, comorbidities, cognitive impairment, vitamin-D deficiency, protein

malnutrition, post dialysis hypotension. Cognitive dysfunction can result from uraemia and neuropsychiatric adverse effects from widely used drugs are likely to occur in the patients with the ESRD, including those on the dialysis.⁸Haemodialysis has been associated with the higher fluctuations in the intracranial pressure, alteration in the cerebral blood flow and decreased pressure in the subdural space.⁹ Hence attention is required for the increased risk of subdural hematoma in the patient receiving anticoagulant therapy [10].

According to Mehrotra et al. the patient showed improvement with the adherence to the treatment regimen but showing some limitations. First, data on lifestyle, Glasgow coma scale score, frailty, and some laboratory measurements were unavailable. Second, we were unable to differentiate acute and chronic SDH because neuroimaging records were not included in the reports. Third, the validity of diagnoses of SDH and comorbidity in the claims data could not be verified [11].

The case provides anecdotal evidence of a challenging clinical scenario where there is a necessary indication for therapeutic anticoagulation with comorbid SDH. Longer follow-up, prospective series, and future randomized clinical trials are needed to objectively assess outcomes in this clinically challenging patient population [5].

Conclusion

The high occurrence rate of the subdural hematoma and its recent surges related to the increased use of anticoagulant in the long-term haemodialysis patient. Hence proper care for the patient is necessary to prevent devastating the disorder. The routine use of anticoagulants with heparin during HD sessions may have exaggerated bleeding diathesis, by this the increased use of the anticoagulants in the long-term hemodialysis patient is causing a rise in the occurrence of the subdural hematoma. It is crucial to provide the proper care to prevent this debilitating condition.

This case report is demonstrating that there is a striking enrichment for the underlying comorbid conditions in the patient who has developed SDH and has high risk of the immediate mortality. Hence the benefit of the chronic anticoagulation therapy should be carefully weighed and monitored against the risk of central nervous system bleed in the maintenance haemodialysis. Substantial focus on the early identification and the proactive management of the chronic kidney disease condition should keep a check on at the earlier stages according to the KDIGO foundation guidelines.

This report validates that patients undergoing haemodialysis (HD) face a higher risk of developing subdural hematoma (SDH). This increased risk is attributed to the elevated mortality rate observed in the dialysis patients affected by SDH. Consequently, it becomes imperative to implement the preventive measures aimed at reducing the occurrence of SDH in individuals with the end-stage renal disease (ESRD), especially those undergoing HD treatment. Urgent action is warranted to address this pressing concern.

Preventive Measures

Some of the useful preventive and health maintenance strategies that I have given under the supervision of my guide includes the following, the patient should strengthen the

nutrition, minimise the condition of the anaemia, eat high quality- high protein -low sodium and vitamin rich food to prevent the hypoproteinaemia. I informed their family members to strictly limit the intake of sodium salt and water during the dialysis. As the patient weight is less than the normal according to his age criteria, hence increase in the body weight by no more than the 3-5% of body weight and avoiding rapid ultra filtration and I advised not to eat during the haemodialysis and it is best to eat prior to 1-2 hrs of the start of the dialysis. At this time, the solute and the water are removed by the dialysis only account for about 40% of the expected target, which lead the little effect on the peripheral effective circulating blood volume and would not cause the blood pressure to drop. Compared with the other treatments, haemodialysis is more likely to cause the emotional disturbance such as anxiety, fear. This increases the psychological burden and further leading to the increase in the probability of the hypotension. I communicated with the patients as much as possible and assist the patient to reveal their negative emotions and maintain the good psychological state and comforted the patient more, in addition to all these the overall satisfaction of the patient was high which can help to improve the clinical treatment outcome.

Conflict of Interest

The authors declare that there is no conflict of interest.

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Author Contribution

All author are Contributed equally.

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Inform Consent

Inform Consent Taken by the Patient.

Ethical Considerations

Not Required

References

1. Clin Jam soc. Nephrol; Comparison of subdural hematoma risk between hemodialysis and the peritoneal dialysis patients with ESRD; Jun 2015;10(6):994-1001.
2. I.K.Wang et al; subdural hematoma in the patients with the end stage renal disease receiving the hemodialysis; Jun 2014;21(6):894-900.
3. Bryan J Neth et al; management of chronic subdural hematoma in the patients requiring the therapeutic anticoagulation; July 2022; 27(4);211-213.
4. Pal D, Raj K, Nandi SS, Sinha S, Mishra A, Mondal A, Lagoa R, Burcher JT, Bishayee A. Potential of synthetic and natural compounds as novel histone deacetylase inhibitors for the treatment of hematological malignancies. Cancers. 2023 May 17;15(10):2808.

5. Tilmann Rust, Nicole Kiemer, Albert Erasmus; Chronic subdural hematoma and anticoagulation therapy; Oct 2006; 13(8);823-827.
6. Muhammad F.Hashmi ,oncia Benjamin, sarah L.Lappin; End stage renal disease; sep 2015;34(3)-132-139.
7. Ahmed Fayed et al; retrospective analysis of non-traumatic sub dural hematoma incidence in the patients with the end stage renal disease on hemodialysis; Dec 2021; 43(1);1332-1328.
8. Puneet sood, Grant P sinson, Eric P Cohen subdural hematoma in the chronic dialysis patients and significant and increasing; Oct 2007;2(5);956-959.
9. D.P. Zarowny and I Rose; acute subdural hematoma in maintenance hemodialysis; Sep 1970;103(6) 634-36.
10. M F Stein Jr, JE Cimino, MJ Brescia; subdural hematoma during hemodialysis; Aug 1970;70(15);2022-24.
11. Qi Gan et al; Rapid spontaneously resolving acute subdural hematoma; May 2017;28(3);e287-289.
12. Akifumi Izumihara, Katsuhiko Yamashita, Tonnoyuki Murakami ;Acute subdural hematoma requiring the surgery in the subacute stage;2013;53(5);323-28.