International Journal of Pharmaceutical Research and Applications
Volume 9, Issue 3 May-June 2024, pp: 618-620 www.ijprajournal.com ISSN: 2456-4494

Nicoumalone Induced Subdural Hematoma- A Case Report

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Date of Submission: 01-05-2024 Date of Acceptance: 10-05-2024

ABSTRACT

Subdural Hematoma is a medical emergency that can cause pooled blood to push on the brain. Age, head injury, blood-thinning drugs and alcohol abuse increase the risk of having subdural hematoma. The clinical manifestation of subdural hematoma are severe headache, difficulty in swallowing, impaired voice, mental confusion or sleepiness. Nicoumalone, also known as Acenocoumarol is an anticoagulant medication used to prevent the blood clot formation. While taking Nicoumalone the clotting process is impaired, and even small bleeds can persist and accumulate, resulting in subdural hematoma overtime. A 60 year old female patient was admitted in a tertiary care hospital with complaints of headache and vomiting. The patient had past medical history of RHD S/P MVR (1996), AF with CVR, Hypertension, Dyslipidemia and was under treatment. Due to improper monitoring and long term administration of T.NICOUMALONE 3mg hematoma condition occured

KEYWORDS: Subdural hematoma, Hypertension, Dyslipidemia, Craniotomy, RHD (Rheumatoid Heart Disease), S/P MVR (Status Post Mitral Valve Repair), AF (Atrial Fibrillation), CVR (Cardiovascular Reactivity).

I. INTRODUCTION

Subdural Hematoma is an abnormal collection of blood under the dura mater.The dura mater is the outer thick, strong membrane layer located directly under the skull and vertebral colum. Subdural hematoma develops from a tear in blood vessel and an active bleeding into the space between the dura mater and the arachinoid mater is called a subdural hemorrhage. [1,2]

The etiology of subdural hematoma is head injury, trauma and due to long term use of certain drugs like Warfarin, Aspirin, Nicoumalone. The subdural hematoma involves the disruption of normal cerebral vasculature leading to bleeding into the subdural space, followed by mass effect and neurological dysfunction due to increased intracranial pressure. [3].

Nicoumalone (Acenocoumarol) is an anticoagulant under the classification of Vitamin K antagonist. It is used to prevent and treat harmful clots, thereby reducing the risk of stroke or heart attack. They inhibit the enzyme Vitamin K epoxide reductase (VKOR) and interfere with regeneration of active hydroquinone form of Vitamin K which act as a co-factor for the enzyme gamma glutamyl carboxylase that carries out the final step of gamma carboxylating glutamate residues of prothrombin and factors VI, IX and X. This carboxylation is essential for the ability of the clotting factors to bind with Ca^{2+} and to get bound to phospholipid surfaces, necessary for the coagulation sequence to proceed.[4]

Here we are reporting a case of Nicoumalone induced subdural hematoma where T.NICOUMALONE 3mg was taken for more than 27 years without proper INR monitoring and follow ups.

II. CASE REPORT

A 60 year old female patient was admitted to neurology department with complaints of headache and vomiting for the past one week. Patient took primary treatment from general hospital and came here for further management. She had past medical history of Systemic Hypertension and Dyslipidemia for more than 20 years. For Rheumatic Heart Disease, she had

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Volume 9, Issue 3 May-June 2024, pp: 618-620 www.ijprajournal.com ISSN: 2456-4494

undergone mitral valve repair in 1996 and also had Atrial Fibrillation with Cerebrovascular reactivity. Her past medication history was T. NICOUMALONE 3mg P/O OD, T. ATORVASTATIN 10mg P/O 0-0-1, T. SPIRONOLACTONE 25mg P/O 1-0-0, T. METOPROLOL SUCCINATE 25mg P/O 1-0-0, T. ASPIRIN 75mg P/O 0-1-0.

The patient was conscious, oriented, heart sounds heard with murmur, chest was clear, was able to move all limbs and GI was non-tender. During admission she had a pulse rate of 132 beats/min, respiratory rate of 20 breath/min, blood pressure of 150/90mmHg and saturation of 99%. Her laboratory investigation showed an elevation in Troponin I (6.7ng/L), BNP (415pg/ml) and INR(2.440, 2.130, 3.840, 2.570, 1.130, 1.850) during the hospital stay.

CT scan showed acute on chronic subdural hematoma right frontotemperoparietal region measuring 15mm, midline is shifted to 8mm with compression of right lateral ventricle and minimal distension of left ventricle, hematoma is noted along interhemisphere tissue where no bleed is seen in basal cisterns, no parenchymal bleed, no bleed or infract is seen in cerebellum or brain stem. Plain CT brain showed acute on chronic subdural hematoma with mass effect in the form of right hemicranial cerebral edema, midline shift to the cleft and age related atrophic change.

She was managed with the following medication, initially INJ.VITAMIN K 1ml IV was given at 3:30pm for the activation of clotting factors. The dose of T.NICOUMALONE was adjusted from 3mg to 2mg P/O 0-0-1 in response to INR. INJ. CEFOPERAZONE + SULBACTUM 1.5g IV BD was given on first day to prevent infection, then stopped on that day and converted to tablet. INJ. ESOMEPRAZOLE 40mg IV BD was given to prevent gastric irritation for first 5 days and converted to tablet. INJ. LEVETIRACETAM 500mg IV 1-1-1 was given as prophylaxis of seizure for first 5 days and then converted to tablet with the frequency of 1-1-2. INJ. PARACETAMOL 500mg IV 1-1-1 was given for the first 6 days and then converted to T. PARACETAMOL 650mg P/O 1-1-1 for the treatment of pain. T. BISOPROLOL 2.5mg P/O 1-0-0 and T. SPIRONOLACTONE 25mg P/O 1-0-0 was given for the treatment of Blood Pressure. INJ. ONDANSETRON 4mg IV 1-1-1 was given for first 6 days and then converted to tablet for the prevention of vomiting. T. NAPROXEN SODIUM + DOMPERIDONE 500mg P/O was given at required time for treating inflammation. SYP. ALUMINA + MAGNESIA + SIMETHICONE 10ml P/O 1-0-0 for treating stomach upset. T. AMITRYPTYLINE HYDROCHLORIDE 10mg P/O 0-0-1/2 for treating chronic headache. T.FEXOFENADINE HYDROCHLORIDE 120mg P/O 1-0-1 was given for managing allergic symptoms. T. CEFEROXIME AXETIL 500mg P/O 1-0-1 was given to prevent infection. T.BILASTINE 20mg P/O 0-0-1 was given to treat rhinorrhea. OXYMETAZOLINE HYDROCHLORIDE NASAL DROPS P/N 2°-2°-2° for treating nasal block. The patient was not willing for surgery so finally she was discharged with T. ESOMEPRAZOLE 40mg P/O 1-0-1, T. PARACETAMOL 650mg P/O SOS, T. ONDANSETRONE 4mg P/O SOS for 10days, T. LEVETERACETAM 500mg P/O 1-0-1, T. AMITRYPTYLINE HYDROCHLORIDE 10mg P/O 0-0-1/2 for 1 month, T. BISOPROLOL 2.5mg P/O 1-0-0, T. SPIRONOLACTONE 25mg P/O 1-1-0, T. ATORVASTATIN 10mg P/O 0-0-1 for 10 days, T. NICOUMALONE 2mg P/O 0-0-1 from Monday to Friday, 3mg P/O 0-0-1 on Saturday and Sunday and SYP. ALUMINA + MAGNESIA + SIMETHICONE 10ml P/O 1-0-0 for 7 days. Patient was stable at the time of discharge.

III. DISCUSSION

Nicoumalone is a Vitamin K antagonist used for preventing clot formation. The available doses are 0.5mg, 1mg, 2mg and 3mg. Prolonged use and improper monitoring of Nicoumalone can result in excessive anti-coagulation, increasing the risk of bleeding, including Subdural hematoma, which occurs when blood accumulates between the dura mater and arachinoid mater of the brain. The monitoring parameters for Nicoumalone is INR (International normalized ratio) which measures the clotting ability of blood. The target INR varies depending on the indication for therapy but is generally between 2-3 for most conditions. Additionally, monitoring for signs of bleeding or bruising should be noted.[5]

The proper management of subdural hematoma is two surgical techniques; Craniotomy and Burr holes. Craniotomy is the main treatment of acute subdural hematoma where a section of the skull is temporarily removed to access and remove the hematoma. During the procedure the hematoma is removed using suction and irrigation where it is washed away with fluid. After the procedure the section of skull is put back in place and secured using metal plates or screws. Burr hole surgery is

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for chronic subdural hematoma where a small hole is drilled into the skull and tube is inserted through the hole to drain the hematoma. Sometimes the tube may be left in place for a few days afterwards to drain away blood and reduce the chances of recurrent hematoma.[6]

A case report by Ismail Aissa, et al presented a case on unusual localization of bleeding under Acenocoumarol; spinal subdural hematoma where an 82 year old patient with a history of ischemic heart disease and atrial fibrillation under Acenocoumarol was admitted with sudden onset of paraplegia and intense back pain associated with urinary incontinence and anal sphincter. On examination his lower limb power was MRC grade 0, INR was 10. MRI revealed a posteriorly located spinal hematoma at T12 level, measuring 36mm with spinal cord compression. The condition was managed by T11-L1 laminectomy with evacuation of the subdural hematoma.[7]

In this case the patient showed symptoms of headache and CT brain confirmed the subdural hematoma which was due to chronic intake of T.NICOUMALONE for past 27 years without monitoring. The Naranjo adverse drug reaction probability scale was 6 that represent probable. According to WHO classification adverse drug reaction, the condition belongs to type C (Continuous) that is usually dose related and due to long term use of drug. According to Hartwig severity assessment scale, it was classified as Severe level 5 (The adverse reaction cause permanent damage to the patient).

IV. CONCLUSION

Subdural hematoma is an abnormal collection of blood in dura mater. In this case, it occurred due to long term administration of T. NICOUMALONE which was indicated for prevention of clot formation. It was confirmed from subjective and objective evidence and managed the symptoms associated with it. It was not further confirmed by any method like detection of serum drug concentration or therapeutic drug monitoring. Due to unwillingness towards surgery and request for discharge the patient was advised with anticonvulsant and other supportive medication at the time of discharge. Lack of patient education as well as failure of management marks the role in adverse reaction. Depending on severity, the above mentioned condition is a severe adverse drug reaction where potentially life threatening, causes permanent damage as well as requires intensive medical treatment.

ACKNOWLEDGEMENT

The case report was supported by the above mentioned institution. We express our gratitude to the co- authors and guide who supported throughout the work.

CONFLICT OF INTEREST

The authors declared that they have no conflict of interest.

FUNDING

This received no specific grant from any funding agency in public, commercial or not for profit sectors

CONSENT

Written informed consent was obtained from the patient for publication of this case report. A copy of the written consent is available for review by Editor- in- Chief of this journal on request.

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