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A Rare Case of Cerebral Venous Sinus Thrombosis in A 39-Year-Old Woman Because of Oral Contraceptive Pills: A Case Report with Emphasis on Physiotherapy

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ABSTRACT

Background: While less than 1% of all strokes are caused by Cerebral Venous Sinus Thrombosis (CVST), which primarily affects young adults and children and is characterized by clinical symptoms like headache, nausea, vomiting, optic papilledema, limb paralysis, and epilepsy. Numerous observational studies have demonstrated that using Oral Contraceptive Pills (OCP) increases the risk of CVST by five to twenty-two times. A 39-year-old female patient was brought unconscious to the emergency medicine with a history of cranial headache and giddiness in the last 5-6 days. Post ICU admission physiotherapy was started focusing on early mobility. The report says that early intervention shows better prognosis in patients with cerebral venous sinus thrombosis.
Methods: 39-year-old female developed Cerebral Venous Sinus Thrombosis because of consumption Oral Contraceptive Pills for last 18 years.
Results: Outcomes were taken on day one and 12th day i.e., GCS score, Four Point Score, ICU Mobility Scale and Chest Expansion, there is significant improvements in outcomes is seen after intervention.
Conclusions: The advantages of rehabilitation in enabling the improvement of a patient's condition, leading to favourable and promising outcomes. This case study concluded that, there were significant improvement in GCS score, Four Point Score. ICU Mobility Scale and chest expansion in rare case of Cerebral Venous Sinus Thrombosis (CVST) because of OCP. As a result of the early intervention, stroke survivors have a better long-term prognosis and quality of life.

Keywords: Cerebral Venous Sinus Thrombosis (CVST), Oral Contraceptive Pills, Physiotherapy, Mobility, ICU, Critical Care, Respiratory Physiotherapy.

INTRODUCTION

A rare but dangerous and curable cause of neurologic symptoms is Cerebral Venous Sinus Thrombosis (CVST). While less than 1% of all strokes are caused by CVST, which primarily affects young adults and children and is characterized by clinical symptoms like headache, nausea, vomiting, optic papilledema, limb paralysis, and epilepsy.[1]

Small cerebral veins drain blood from the brain into larger veins like the vein of Galen. The dural sinuses are drained mostly by the internal jugular veins, which receive these larger veins' drainage. Due to the numerous anastomoses that exist between

cortical veins, the venous territories are not as well defined as arterial territories. In the event of an obstruction, these enable the establishment of collateral circulation.[2] The superior sagittal sinus (72%) and the lateral sinuses (70%) are the cerebral venous sinuses most commonly impacted by CVST. More than one sinus can be affected in around one-third of cases.[3]

Only 34% of these patients had an acquired or inherited prothrombotic condition, such as an anticoagulant protein deficiency, positive Antiphospholipid Antibodies (APL), pregnancy, oral contraceptive use, cancer, etc. Infection, hematologic abnormalities, systemic illnesses, and mechanical precipitants are other unusual risk factors.[4]

A frequent and potentially fatal complication of nephrotic syndrome- thrombosis typically develops early in the course of the illness. Nearly 1.8%-5.0% of children and 20%-30% of adults with NS experienced thromboembolism. In children, the majority of thromboembolism incidents take place within 3 months of NS diagnosis, while in adults, they usually happen within the first 6 months. [4]

For CVST, a number of risk factors have been identified. These include medications [such as Oral Contraceptive Pills (OCP)] and medical conditions that increase the likelihood of thrombus formation, such as thrombophilia, neoplasms, inflammatory conditions, transient circumstances (such as pregnancy, the postpartum period, surgery, trauma, dehydration, and CNS infections), Numerous observational studies have demonstrated that using OCP increases the risk of CVST by five to twenty-two times.[5]

In a significant portion of ICU survivors, prolonged ICU care is always accompanied by challenges. Physical deconditioning, fatigue, loss of function, and a poor quality of life have all been linked to prolonged periods of inactivity.[6]

Case History and Case Description

A 39-year-old female patient was brought to the emergency medicine department unconscious, with a history of cranial headache and giddiness lasting for the past 5-6 days. Upon assessment using the Glasgow Coma Scale (GCS), the patient scored E3 M1 V1, indicating a reduced level of consciousness. The patients relative reported a history of consuming Oral Contraceptive Pills from past 18 years. Additionally, she had a known renal cyst and was experiencing dehydration. It was noted that the patient had undergone two previous Lower Segment Cesarean Sections (LSCS), with the first procedure performed 16 years ago and the second one 11 years ago. No other past medical or surgical history was provided. To aid in diagnosis, the patient underwent a Computed Tomography (CT) scan and an Ultra Sonography (USG). Following these procedures, the patient was admitted to the Intensive Care Unit (ICU) for close monitoring and further management.

Clinical Findings: After obtaining consent from the relatives, she was examined.

Vitals:

Blood pressure- 134/87 mmHg
Respiratory rate- 16 breaths/minute
Heart rate- 86 beats per minute
Temperature- Afebrile
SpO2- 98%

Patient was fed on Ryle's tube and was catheterized.

Medications

Drug	Route	Dose	Frequency
Inj. Monocef	Intravenous	2g	BD
Inj. PTC	Intravenous	1g	SOS
Inj. Pan	Intravenous	40g	OD
Inj. Emset	Intravenous	4g	TD
Inj. Optineuron	Intravenous	1cup in 100ml NS	OD

Table 1.

GCS was 5/15 - E3 M1 V1
The Four Point Score was E2 M3 B4 R4
Sensory examination was not assessable
Tone on Modified Ashworth scale was grade 0.
Deep tendon reflexes were diminished.
Babinski sign was positive.

Respiratory examination on auscultation reduced breath sounds were noted in bilateral lower zones with crepitus.
Reduced chest expansion.

Investigations:

1. CT neck and Brain Angiography

Image 1

Image 2

CT neck and Brain Angiography (Image1and 2) were performed which gave impression of thrombosis of vein of Galen, straight sinus, right transverse sinus, right sigmoid sinus and Macranial portion of right internal jugular vein. Hemorrhages in right temporal lobe and left gangliocapsular region-likely venous hemorrhagic infarcts.

2. Plain CT Brain

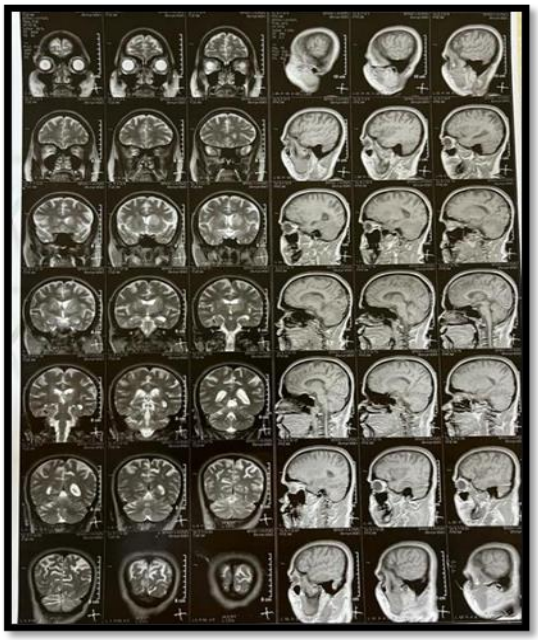

Image 3

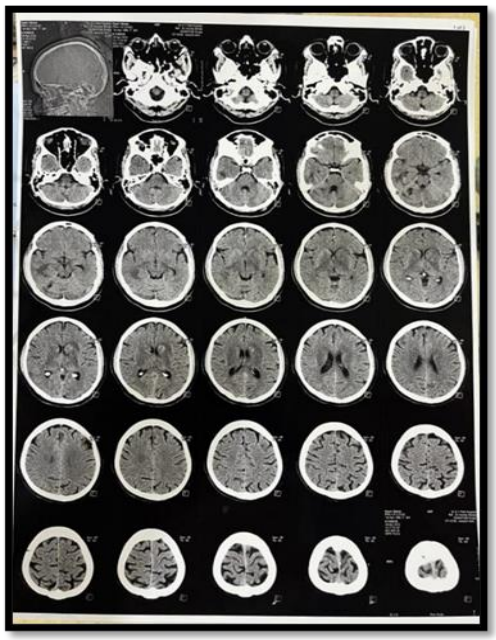

Image 4

Plain CT Brain (Image 3 and 4) reveals Hyperdense lesions are seen in right temporal lobe and left gangliocapsular region - hemorrhages. Perilesional edema is noted. Effacement of temporal horn of right lateral ventricle is noted. No significant change is noted compared to previous CT scan dated 24-04-2023. Ill-defined hypodensities are seen in right gangliocapsular region and bilateral thalami - edema. Gliotic area is seen in right cerebellar hemisphere.

3. USG abdomen and pelvis:

USG abdomen and pelvis gives impression of Hepatomegaly and Left sided simple renal cyst.

4. Blood Test:

Hematological investigation showed reduced serum protein, sodium, potassium and chloride.

INTERVENTION

Physiotherapy management:

Day	Intervention	Dosage	Clinical reasoning
1,2,3	Passive Range of Motion to major joints.	10 reps * 2 sets	To maintain joint integrity and flexibility
	Chest Percussion and Chest Vibration Respiratory PNF		To clear secretions from lungs and maintain respiratory hygiene To improve chest expansion.
	Positioning	Every 2 hourly	To clear secretions (postural drainage), to prevent bed sores
4,5	Passive Range of Motion to major joints	10 reps * 2 sets	To maintain joint integrity and flexibility
	Chest percussion and Chest vibration, Respiratory PNF		To clear secretions from lungs and maintain respiratory hygiene To improve chest expansion.
	Positioning	Every 2 hourly	To clear secretions (postural drainage) to prevent bed sores
	Mobilization from supine to side lying to sitting in upright position with support	3 reps	To promote orthostatic tolerance and minimize postural hypotension
6,7,8	Active assisted range of motion exercise to major joints	10 reps* 2 sets	To maintain joint and soft tissue integrity and flexibility
	Active assisted bed mobility (supine to side lying to bed side sitting with minimal support)	3 reps	To enhance functional mobility and prevent deconditioning
	Active Cycle of Breathing Technique Thoracic Expansion Exercise Diaphragmatic Breathing Exercise		To clear secretions from lungs and maintain respiratory hygiene To improve chest expansion.
	Positioning	Every 2 hourly	To clear secretions (postural drainage) to prevent bed sores
9,10,11	Proprioceptive Neuromuscular Facilitation diagonal patterns to upper limb and lower limb	7 reps* 2sets	To enhance functional mobility for activities of daily living and strength of muscles
	Active bed mobility (supine to side lying to bed side sitting)	3 reps	To enhance functional mobility
	Trunk control exercise in bed side sitting (trunk rotation, seated side bends, seated weight shifts)	10 reps * 1set	For early progression to standing
	Inspiratory Hold Exercises Thoracic expansion exercise	5reps * 3sets 10reps* 2 sets	To improve inspiratory capacity To improve chest expansion.
12	Proprioceptive Neuromuscular Facilitation diagonal patterns to upper limb and lower limb	10 reps* 2sets	To enhance functional mobility for activities of daily living and strength of muscles
	Active bed mobility (supine to side lying to bed side sitting)	5 reps	To enhance functional mobility
	Trunk control exercises in bed side sitting (trunk rotation, seated side bends, seated weight shifts)	10 reps * 1set	For early progression to standing
	Bed side sitting to standing	3 reps	To enhance functional mobility
	Inspiratory Hold Exercises Thoracic expansion exercise	5reps * 3sets 10reps* 2 sets	To improve inspiratory capacity To improve chest expansion.

Table 2.

Outcome Measures:

Outcome Measure	Pre	Post
Glasgow coma scale	E3 M1 V1	E4 M6 V5
Four Point Score	E2 M3 B4 R4	E4 M4 B4 R4
ICU mobility scale	0	4
Chest Expansion	1.5cm	3cm

Table 3.

RESULT

Early initiation of rehabilitation for patients who have experienced CVST stroke plays a crucial role in facilitating a prompt recovery with basic training in bed mobility enhancing both mobility and joint integrity.

DISCUSSION

Cerebral Venous Sinus Thrombosis is rare form of stroke associated with paresis. For the intervention of paresis, rehabilitation begin in the acute stage is the best option.[7] The reason for this is that bed rest has a negative impact on musculoskeletal, cardiovascular, respiratory, and emotional health, which may cause recovery to be interrupted in the acute stage. Different exercise was progressively planned which include prevention of bed sore by bed mobility, respiratory hygiene and early transitions. PNF techniques are those that involve the application of external proprioceptive and tactile stimuli that result in reactions to reflex respiratory movements that appear to change breathing frequency and depth. Through this mechanism, control and coordination movements of the thoracic cage were facilitated, and there is an improvement in chest expansion and compliance.[8] Patients who engaged in early PNF-based rehabilitation exercises benefit from them by demonstrating early and improved bed mobility, transfer, and upper body control, and by demonstrating little need for assistance in carrying out these activities.[9] Strong evidence was established by Van Criekinge T that trunk training can enhance mobility, balance, and trunk control after subacute and chronic stroke. Their findings support earlier studies that found trunk training to be an effective rehabilitation method for enhancing dynamic seated balance.[10] Physiotherapy management will help to improve the posture, muscle tone, and stability and ADL of patient.

CONCLUSION

The advantages of rehabilitation in enabling the improvement of a patient's condition, leading to favorable and promising outcomes. This case study concluded that, there were significant improvement in GCS score, Four Point Score. ICU Mobility Scale and chest expansion in rare case of Cerebral Venous Sinus Thrombosis (CVST) because of OCP. As a result of the early intervention, stroke survivors have a better long-term prognosis and quality of life.

Declaration by Authors

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