

Oral Contraceptive Pills Induced Vein of Labbe Thrombosis

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Abstract

Use of oral contraceptive pills increases the risk of cerebral venous sinus thrombosis. OCP use increases the levels of clotting factors 2, 6, 8, Protein C and decrease levels of Anti-Thrombin, tissue factor pathway inhibition and Protein S which are necessary to clot the blood. Patients may present clinically with headache, seizures, aphasia, memory and cognitive impairment. It is readily seen on MRI and CT venograms. Risk factors for thrombosis include the oral contraceptive pill, pregnancy, and the Puerperium and central nervous infection or malignancy. The predisposing factors are hypercoagulative state, congenital thrombophilia's, steroid therapy, positive ANA and antiphospholipid syndrome. Treatment of cortical venous thrombosis consists of anticoagulants and addressing the risk factors. In this case we report oral contraceptives induced left vein labbe thrombosis complicated with severe headache and seizures.

Keywords: Cortical venous thrombosis; Oral contraceptive; Menorrhagia

Introduction

Isolated Cortical Venous Thrombosis (CVT) without sinus involvement is uncommon [1]. We encountered an uncommon case of isolated thrombosis of the vein of Labbe in 45 years female following administration of Combined Oral Contraceptive Pills (OCP).

This case emphasizes the close monitoring of patients with combined OCPs. Early suspecting of cerebral venous thrombosis for neurological symptoms in these patients helps in the timely intervention.

Case Report

A 45 years old female patient on oral contraceptive medication (NOVYNETTE-oral contraceptive medication a combination of Desogestrel 150 MCG+Ethinyl estradiol 20 MCG) for menorrhagia for one month admitted with severe headache since 15 days and one episode of generalized seizure one week back.

She is not having any past medical history of Diabetes, Hypertension and any chronic and systemic illness and she is non-alcoholic. Computed Tomography (CT) brain done showed left temporal hypodense lesion suggesting edema and contrast image showed ring-enhancing lesion (Figure 1).

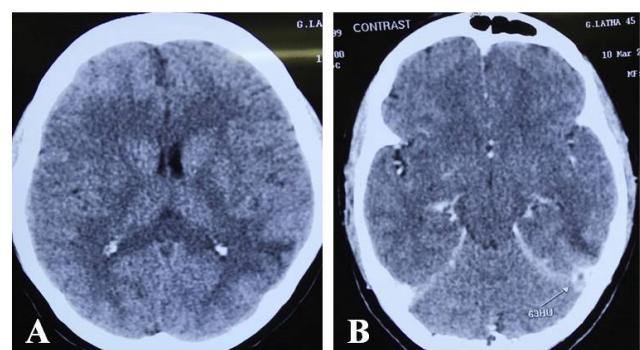


Figure 1: (A): CT brain plain showed hypodense edema near the posterior temporal region; (B): Contrast image showed ring-enhancing lesion.

Magnetic Resonance Imaging (MRI) done showed left temporal cortical venous thrombosis involving the left vein of Labbe with left temporal hemorrhagic infarct. It was hyperintense on T1 and T2 weighted images.

There was hypointense thrombosed vessel seen in the left temporal region (Figure 2). She was treated on anticoagulants

and anti-convulsants. At six months follow-up period, she was doing well.

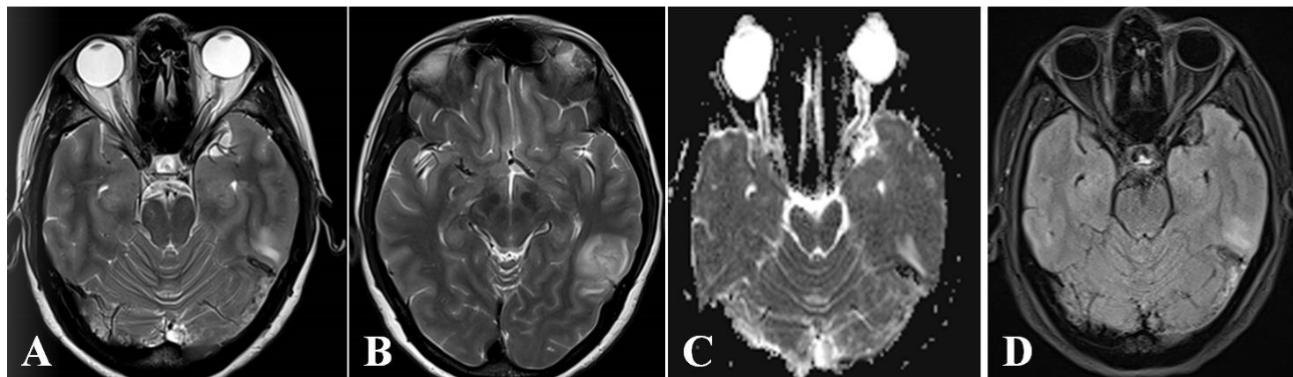


Figure 2: (A): MRI brain axial T2W showed hypointense thrombosed vessel; (B): T2W image showed hyperintensity seen near temporal suggest late subacute hemorrhage; (C): FLAIR and; (D): ADC images showed hyperintense changes with the thrombosed vessel.

Discussion and Conclusion

Isolated CVT involving of a single vein without sinus involvement is uncommon. Cortical vein thrombosis is usually secondary to retrograde extension of dural sinus thrombosis. Review of the literature reveals few cases of isolated thrombosis of either the inferior anastomotic vein of Labbe or vein of Trolard [1-11].

The vein of Labbe is part of the superficial cerebral venous system of the temporal lobe [11]. This is a descending cortical vein generally originates in the perisylvian area and travels posteriorly and inferiorly before emptying into the transverse sinus. Its diameter is inversely related to that of Trolard's

superior anastomotic vein and to the Sylvian group. Apart from transverse sinus, the vein of Labbe may drain into the superior petrosal sinus, the junction of superior petrosal sinus and transverse sinus. Vein of Labbe is prominent in 40% of cases, the vein of Trolard in 32% and the superficial middle cerebral vein in 8% of cases. The vein of Labbe is dominant more on the left side than the right side that can explain the high incidence of thrombosis of the vein of Labbe on left side.8Labbe's vein collects blood from cortical veins of the lateral temporal lobe and drains into the transverse sinus [8,9] The lower cortical veins drain the temporal and parietooccipital lobes. They may either drain into the vein of Labbe or terminate separately in the transverse sinus [11].

Table 1: List of individual case reports of cortical venous thrombosis.

| S. No . | Author | Age | S e x | Site | Involving vascular structure | Risk factor/associated illness |
|---------|---------------------|-------------------|-------|---|------------------------------|---|
| 1 | Ramsawak et al. [1] | 27 years | F | Left temporal | Left vein of Labbe | Combined OC pills |
| 2 | Khosya [2] | 18 years | F | Left temporal hemorrhagic infarct | Left vein of Labbe | Loose stools |
| 3 | Thomas et al. [3] | 23 years | M | Left posterior temporal hemorrhagic infarct | Left vein of Labbe | Not mentioned |
| 4 | Tabuchi et al. [4] | 39 years | M | Left temporal hemorrhagic infarct | Left vein of Labbe | Subarachnoid hemorrhage on the contralateral side and high levels of antinuclear antibodies |
| 5 | Dorndorf et al. [5] | 27 years | F | Right posterior temporal and parietal | Right vein of Labbe | Family history of thrombosis in lower limbs |
| 6 | Jones et al. [6] | Full-term neonate | F | Left temporal lobe | Left vein of Labbe | A spontaneous massive fetal-maternal hemorrhage |
| 7 | Gold [7] | 30 years | M | Right temporal hemorrhagic infarct | Right vein of Labbe | Sickle cell disease |
| 8 | Rao [9] | 46 years | M | Right high parietal hemorrhagic infarct | Right vein of Trolard | HBsAg Positive |
| 9 | Shivaprasad [11] | 66 years | M | Left temporal | Left vein of Labbe | Tongue carcinoma |

Clinically it has a key role as thrombosis or avulsion of the vein would result in infarct in the corresponding areas of left temporal and adjacent posterolateral occipital lobes [11]. Patients may present clinically with headache, seizures, aphasia, memory and cognitive impairment. In severe cases, it may result in brain swelling, herniation, and mortality [7].

Vein of Labbe can be recognized on MRI as a prominent flow void on the lateral aspect of the temporal lobe. It is readily seen on MRI and CT venograms. Thrombosis of this vein results in a characteristic pattern of hemorrhagic infarction in the lateral aspect of the underlying temporal lobe (**Table 1**) [6].

In CT thrombosed vein of Labbe may appear as a hyperdense lesion on the cortical surface. Thrombosed vessel and non-visualization of the veins on MRI and MR venography are definitive features of CVT. Signal changes of venous thrombi vary according to the time interval between the formation of thrombus and imaging. T2 weighted gradient echo sequence is very sensitive and useful for early detection of CVT. Digital Subtraction Angiography (DSA) may be needed for unequivocal diagnosis. Hyperdense delineation of a cortical vein was described as "cord", "spot", band-like appearance on the cortical surface in acute stage [10,12,13]. Indirect signs are temporal lobe infarction, hemorrhage, or edema. Ultimately, recanalization leads to progressive signal loss and return of the normal flow void [11,14,15].

Risk factors for thrombosis include the oral contraceptive pill, pregnancy, and the puerperium and central nervous infection or malignancy. The predisposing factors are hypercoagulative state, congenital thrombophilias, steroid therapy, positive ANA and antiphospholipid syndrome. The presence of cortical subarachnoid hemorrhage might be an early sign of underlying CVT [1,4].

OCP use increases the levels of clotting factors 2, 6, 8, protein C and decrease levels of antithrombin, tissue factor pathway inhibition and protein S which are necessary to clot the blood [16]. Studies have shown that this effect on coagulation factors was more pronounced in desogestrel users than in levonorgestrel users and limited to combined oral contraceptives [17]. Prostyn causes the blood vessel to relax and widen allowing the blood to pool in veins, increasing the risk of clot formation. The risk of clotting also increases with larger doses of estrogen, so it is recommended that women use a low dose of estrogen as possible [18].

Treatment of cortical venous thrombosis consists of anticoagulants and addressing the risk factors. Outcomes of isolated cortical venous thrombosis, are generally favorable. In conclusion, isolated thrombosis of Labbe is an unusual condition. A high index of clinical suspicion and diagnosis helps in early [12].

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