

Lacunar infarction with oral contraceptives: An unusual case report

Sasmita Biswal

Department of Pharmacology, V.S.S Medical College and Hospital, Burla, Odisha, India

ABSTRACT

Combined oral contraceptives are one of the risk factor for stroke in women. We report a case of an arterial ischemic stroke due to lacunar infarction in a 35-year-old previously healthy female patient induced after 3 years on Sukhi an oral contraceptive after two times artificial abortions. A brain MRI finding was suggestive of lacunar infarction. Her symptoms improved after stopping the oral contraceptive and putting her on I.V heparin therapy.

Key Words: Arterial ischemic stroke, combined oral contraceptives, lacunar infarction, I.V heparin therapy

INTRODUCTION

Oral contraceptives increase the risk of venous phenomenon due to the hypercoagulable state as a result of their effect on increasing the levels of the circulating coagulation factors.^[1] Since their introduction, hormonal contraceptives have always been associated with an increased risk of stroke (cerebrovascular accidents). Thus, thrombotic or ischemic strokes have frequently been associated with the use of oral contraceptives^[2] where the risk is directly proportional to the amount of estrogen present in the pill.^[3] As the expected risk is presumed to be higher in women who take more than 50 mcg of estrogen per day, physicians hence recommend pills containing 35 mcg of estrogen or less. Thus, the ideal combined oral contraceptive (COC) is the one that contains the lowest amount of estrogen, which in combination with progesterone is effective in preventing pregnancy although minimizing the adverse effects.^[4] Hence, all the available COC in the market contain lower doses of estrogen and progesterone than they did in the past, and the current recommendations are to restrict the use of COC to younger women who do not have the associated risk factors for cardiovascular disease.

A common cause of ischemic strokes is lacunar cerebral infarction (LACI) that results from the occlusion of any one of the cerebral penetrating arteries,^[5] which accounts for nearly 25% of all ischemic strokes, with an annual

incidence of approximately 15/100,000 people.^[6] LACI are particularly commonly associated with hypertension and diabetes due to the associated hypercoagulable state. There occur small infarcts either in the basal ganglia, thalamus, and white matter or even in the brain stem. Common symptoms and complications of LACI include anemia, high blood pressure, cerebral infarction, pneumonia, dizziness, cerebral hemorrhage. LACI has usually been seen in uncontrolled hypertension, osteoporosis, arthritis, diabetes and depression. It is also a common adverse effect of certain drugs such as, prednisolone, alendronate, atorvastatin, levothyroxine sodium, etc.

Sukhi is a type of an oral combined contraceptive pill for women that are available in Bangladesh only.^[7] Out of the 28 pills in a strip, seven are iron supplements which are brown in colour and the rest of the pills are COC containing Lynestrenol 2.5 mg along with 50 mcg of Ethinyl estradiol per tablet. Although the current recommendation suggests the use of lower doses (30 to 35 µg) of estrogen in oral combined contraceptive pills, Sukhi is the only COC contraceptive that contains high amounts of estrogen. Further, gullible consumers have a wrong notion that Sukhi is a homeopathic contraceptive since the composition of the pill is written in Bengali. For this reason and because

Address for Correspondence: Dr. Sasmita Biswal, Associate Professor, Department of Pharmacology, V.S.S Medical College and Hospital, Burla, Odisha, India. E-mail: drsasmitabiswal@yahoo.in

Access this article online

Quick Response Code:



Website:
www.jmidlifehealth.org

DOI:
10.4103/0976-7800.118996

of its easy availability as an over the counter drug (OTC) it is also being popularly used in India. Though literature search revealed no documented adverse drug reaction with this COC we report a case of LACI in a 35 year old woman who was on Sukhi for contraception for the last 3 years. To our knowledge, this is the first ever documented case, for there are no such available evidences suggesting such side effects with the otherwise popular combined pill Sukhi.

CASE REPORT

A 35-year-old previously healthy female patient on 'Sukhi' for contraception for the last 3 years presented to the Emergency Department of S.C.B. Medical College and Hospital, Cuttack in November 2011, with complaints of sudden onset (45 min earlier) of slight paralysis of the right side of her body and the inability to express herself by speech, writing, or signs. She was afebrile, alert, oriented with blood pressure of 122/98 mm Hg, pulse rate 100/min. She was a non-smoker, not a known diabetic or hypertensive, but there was history of repeated abortions in the past. General physical examination was normal with normal intact memory. Fundoscopic findings were normal although neurological examination revealed right sided hemiparesis with upward right babinski reflex. On investigations the parameters such as hemogram, ESR, random blood sugar, kidney function tests, liver function tests, electroencephalogram, electrocardiogram, serum cholesterol, serum electrolytes, urine analysis and X-ray chest were within normal limits. Plasma amino acid, vascular profile, and metabolic profile (including levels of homocysteine, ammonia, and lactate) were also within normal limits. Hemoglobin electrophoresis also revealed normal bands. Additional tests such as prothrombin time, activated partial thromboplastin time, antinuclear antibody test, anticardiolipin antibody immunoglobulin levels, protein C level and antithrombin III level were within normal limits.

However a non-contrast enhanced computed tomography of brain showed a LACI [Figure 1] which was confirmed on a magnetic resonance imaging scan. The patient was then hospitalized and treated with intravenous unfractionated heparin, which was then switched on to subcutaneous enoxaparin. After 7 days, her condition completely improved and she was discharged with oral warfarin.

DISCUSSION

An ischemic stroke results from inadequate blood supply due to occlusion of an artery usually due to thrombus or atherosclerotic plaques. Oral contraceptives, particularly that containing high estrogen dose can increase the risk of thrombus formation. Though studies have shown

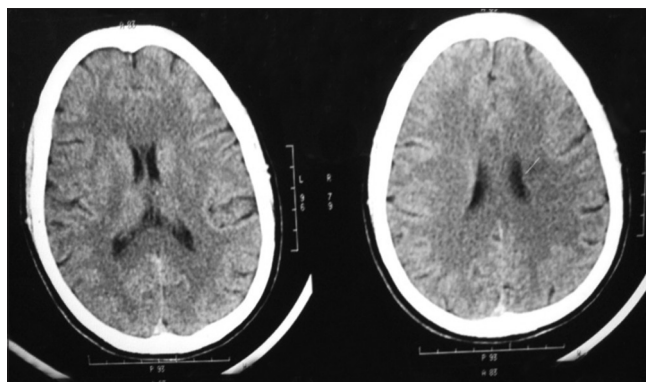


Figure 1: Lacunar Infarction

an increased risk of acute myocardial infarction and hemorrhagic stroke among users of oral contraceptive agents^[2,3] this type of LACI reported in our patient within a span of 3yrs of usage with an oral contraceptive has not been reported so far.

It is well documented that oral contraceptive use increases the risk of venous thromboembolic disease as well as arterial stroke via a mechanism of paradoxical embolism due to a resultant hypercoagulable state. Certain studies have suggested an observed increase in the levels of serum procoagulants such as factor I, VII, VIII, IX, X, XII, and XIII along with a decrease in anticoagulant factors such as protein S and antithrombin III in persons on combined pills.^[8]

In addition to the above mentioned mechanisms underlying risk of oral contraceptive-associated venous thromboembolism, there is also an evidence for a genetic susceptibility for oral contraceptive associated stroke. The most susceptible are the women who carry the alleles of the methylene tetrahydrofolate reductase C677T and the factor V Leiden (FV G1691A) genes.^[9] Persons with polymorphic forms of the angiotensin-converting enzyme and the angiotensinogen gene may also have increased risk of stroke among women using oral contraceptives.^[10] Elevated levels of the factor VII, lipoprotein-associated phospholipase A₂ has also been shown to double the risk of oral contraceptive associated stroke.^[11]

CONCLUSION

Though oral contraceptive drugs are one of the most effective forms of birth control, concern still exists about the short-term and long-term risks associated with these agents. Since the amount of estrogen in oral-contraceptive preparations has been thought to be chiefly responsible for these risks, in recent years newer, low-estrogen oral contraceptives (containing less than 50 µg) have been developed and are widely being used

nowadays. Furthermore estrogen-containing hormonal contraception are better avoided among women with a history of cardiovascular disease, including stroke where progestin-only hormonal contraceptives can be used in the setting of stroke. Hence, where oral contraceptives containing the least possible estrogen are recommended and are usually prescribed COC like Sukhi are also irrationally prescribed. Thus, clinicians must always be extra cautious even when prescribing contraceptives for many issues must be taken into account such as the amount of the hormones in them, the genetic pattern of persons thought to be at risk and the rationality of the OTC available COC.

REFERENCES

1. Spitzer WO, Lewis MA, Heinemann LA, Thorogood M, MacRae KD. Third generation oral contraceptives and risk of venous thromboembolic disorders: An international case-control study. Transnational Research Group on Oral Contraceptives and the Health of Young Women. *BMJ* 1996;312:83-8.
2. Heyman A, Arons M, Quinn M, Camplong L. The role of oral contraceptive agents in cerebral arterial occlusion. *Neurology* 1969;19:519-24.
3. Gerstman BB, Piper JM, Tornita DK, Ferguson WJ, Stadel BV, Lundin FE. Oral contraceptive estrogen dose and the risk of deep venous thromboembolic disease. *Am J Epidemiol* 1991;133:32-7.
4. Croft P, Hannaford PC. Risk factors for acute myocardial infarction in women: Evidence from the Royal College of General Practitioners' oral contraception study. *BMJ* 1989; 298:165-8.
5. Sacco S, Marini C, Totaro R, Russo T, Cerone D, Carolei A. A population-based study of the incidence and prognosis of lacunar stroke. *Neurology* 2006;66:1335-8.
6. Longstreth WT Jr, Bernick C, Manolio TA, Bryan N, Jungreis CA, Price TR. Lacunar infarcts defined by magnetic resonance imaging of 3660 elderly people: The cardiovascular health study. *Arch Neurol* 1998;55:1217-25.
7. Available from <http://www.hindu.com/2007/04/02/stories> [Last assessed on 2013 Oct 4].
8. Winkler UH, Schindler AE, Endrikat J, Dusterberg B. A comparative study of the effects of the hemostatic system of two monophasic gestodene oral contraceptives containing 20 micrograms and 30 micrograms ethinylestradiol. *Contraception* 1996;53:75-84.
9. Slooter AJ, Rosendaal FR, Tanis BC, Kemmeren JM, Van Der Graaf Y, Algra A. Prothrombotic conditions, oral contraceptives, and the risk of ischemic stroke. *J Thromb Haemost* 2005;3:1213-7.
10. Li Y, Chen F, Zhou L, Coulter D, Chen C, Sun Z, *et al.* COC use, ACE/AGT gene polymorphisms, and risk of stroke. *Pharmacogenet Genomics* 2010;20:298-306.
11. Bloemenkamp KW, de Maat MP, Dersjant-Roorda MC, Helmerhorst FM, Kluit C. Genetic polymorphisms modify the response of factor VII to oral contraceptive use: An example of gene-environment interaction. *Vascul Pharmacol* 2002;39:131-6.

How to cite this article: Biswal S. Lacunar infarction with oral contraceptives: An unusual case report. *J Mid-life Health* 2013;4:188-90.

Source of Support: Nil, **Conflict of Interest:** None declared.

Announcement

Android App



Download
**Android
application**

FREE

A free application to browse and search the journal's content is now available for Android based mobiles and devices. The application provides "Table of Contents" of the latest issues, which are stored on the device for future offline browsing. Internet connection is required to access the back issues and search facility. The application is compatible with all the versions of Android. The application can be downloaded from <https://market.android.com/details?id=comm.app.medknow>. For suggestions and comments do write back to us.