Acute Aortic Occlusion Due to Oral Contraceptive Use: Case Report

Oral Kontraseptif Kullanımına Bağlı Akut Aortic Oklüzyon: Olgu Sunumu

**ABSTRACT** Oral contraceptive drugs are known to cause hypercoagulability and induce arterial and venous thrombosis especially in patients with thrombophilias. Combined oral contraceptive pills increases the risk of venous thromboembolism by two times and arterial thromboembolism (myocardial infarction, ischemic stroke and peripheral emboli) risk by three times. Other risk factors for venous thromboembolism are increased age, obesity and thrombophilias. Thrombosis occurs as a result of interaction between hereditary and acquired risk factors. In this case, we report a 45 year-old female patient admitted to our clinic with sudden left leg pain in whom immediate multi slice computed tomography (MDCT) revealed acute aortic occlusion.

**Key Words:** Thromboembolism; contraceptive agents, female; aorta, abdominal


**Anahtar Kelimeler:** Tromboembolism; kontraseptif ajanlar, kadın; aorta, abdominal

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Combined oral contraceptive (COC) pills, hormone replacement therapies (HRT) and pregnancy are known to induce a hypercoagulable state, especially in patients with thrombophilias, and may cause arterial and venous thrombosis. It is shown that COC use increases the risk of venous thromboembolism (VTE) by nearly two times and arterial thromboembolism risk (myocardial infarction, ischemic stroke and peripheral emboli) by almost three times.1 There are some other risk factors known to increase the risk of VTE, the most frequent of these are obesity, increased age and thrombophilias. Risk factors for arterial thromboembolism are age, obesity, diabetes, smoking, hypertension and hyperlipidemia.

The combined oral contraceptive is not only highly effective, but it also has a remarkably good safety profile. Concerns over safety persist parti-
cularly with regard to venous thromboembolism (VTE), stroke and myocardial infarction (MI). Although epidemiological studies consistently show an increase in risk of VTE, the results are more controversial with regard to arterial diseases.²

**CASE REPORT**

A 45 year-old female patient admitted to our clinic with complaints of sudden severe left leg pain. Physical examination was remarkable for absent left posterior tibial and dorsalis pedis arterial pulses, whereas all other arterial pulses were palpable. Risk factors for thrombosis in the patient were oral contraceptive use (Gestoden; etinil estradiol) and smoking. Cardiac auscultation and electrocardiography were normal.

There was no flow in the left superficial femoral artery on arterial colored Doppler ultrasonography. Multi slice computed tomography (MDCT) taken after intravenous radiocontrast drug injection revealed near complete occlusion four centimeters long at the infrarenal portion of the abdominal aorta and filling defect compatible with thrombus (Figures 1 and 2). The patient underwent immediate surgery. Thrombectomy was performed using six French (6F) Fogarty catheter for aorta and five French (5F) Fogarty catheter for left superficial femoral artery (SFA) and fresh thrombus was discharged. Two hours after the operation, the patient complained of right leg pain. Right lower extremity pulses weren’t palpable and again, emergent thrombectomy was performed and fresh thrombus was discharged from right SFA.

Postoperative period was uneventful, bilateral lower extremity pulses were palpable on physical examination and leg pain resolved completely. Aspirin and warfarin therapy started. Warfarin dosage was adjusted to achieve a target international

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**FIGURE 1:** Aortic occlusion (white arrow).

**FIGURE 2:** Transverse view (white arrow).

**FIGURE 3:** Patent aorta after embolectomy (black arrow).
nor mal ized ra ti o (INR) be tween 2.0 and 3.0. The pa ti ent was dis char ged on pos to pe ra ti ve fifth day with complete re co very. On follow up, the pa ti ent was eva lu a ted for he re di tary throm bop hi li a but no ano maly was fo und. Con trol CT an gi og raphy was per for med at se cond month (Fi gu re 3).

DISCUSSI ON

There is pub lis hed evi den ce show ing in terac ti ons be tween oral con tra cep ti ves and car di o vas cu lar and ha emos ta tic sys tem. Oral con tra cep ti ves in du ce both pro throm bo tic and fi bri nolytic chan ges in ha emos ta tic factors and an im bal ance in ha emos - tasis is likely to be im por tant in oral con tra cep ti ve in - du ced VTE. The com plexity of the changes in vol ved and the dif fi culty of as cri bing cli ni cal sig - ni ficance has meant that un cer ta inty per sists. A se ri ously un der-re se arc hed area con cerns va su lar chan ges in oral con tra cep ti ve users.2 Endo the li al and myo car di al es tro gen re cep tors in car di o vas cu lar sys tem are re spon sible for ra pid va so di la tor re - spon se by the way of nit ric oxi de. In ad di ti on, they have in hi bi tory ef fects through ge no mic ways on the prol ifera tion of smooth musc le cells and also in cre a sed en do the li al cell growth in long-term.3

His to lo gi cally, endo the li al and in ti mal prol ifera tion have been iden ti fi ed in women ex posed to high plas ma es tro gen con cen tra ti ons and these le sions are as so ciated with throm botic occlu si on. Ot her struc tu lar chan ges may re sult in in creased va sular per me a bi lity, loss of va su lar tone and ve nous stasis. With re gard to ar te ri al dis ease risk, epi - de mi o lo gi cal in for ma ti on re la ting to do se ef fects and joint ef fects with ot her risk fac tors, and studi es of pathol ogy and chan ges in risk fac tors, sug gests that oral con tra cep ti ve use per se does not cause ar te ri al dis ease.2 It can, nev er the less, syn ergise very pow er ful ly with subc lin ical en do the li al dam age to pro mo te ar te ri al occlu si on. Ac cor dingly, the pro - throm bo tic ef fects of the oral con tra cep ti ve es tro gen in - ter ve ne in a cycle of en do the li al dam age and re pair which would oth er wise re main cli ni - cally si lent or would ul ti - mate ly pro gress - in, for ex - ample, the pres ence of cig a ret te smo king or hy - pertension- to atherosclero sis.

Numer ous studies have found, with re mar - kable con sist en cy, an ele va ted risk of ve no us throm bo em bo li sm among cur rent users of low es - tro gen dose com bined oral con tra cep ti ve (COC) drugs. The risk is sub stan ti ally ele va ted among wo - men with vari ous in her ited clot ting factor de fects. The ef fects in COC users with other risk fac tors for ve no us throm bosis tend to be less pro nounced and more in con sis tent. A num ber of stud ies have found higher re la tive risks among cur rent users of low es - tro gen dose COCs con taining desog es trel or gesto - dene, than among users of sim ilar prod ucts con taining lev onor gest rel. The risk of car di ova su lar dis ease of any de scription is low in COC users. Wo men can min is, and pos si bly el i mi - na te en ti tally, their ar te ri al risks by not smo king and by hav ing their blood pres sure checked be for e us ing a COC (in or der to av oid its use if ra is ed blo od pres - sure is dis co vered). Users may de cre a se their ve no - us throm bo em bo lic risk by their choice of COC prepa ra tion al though the ef fects will be mod est.4

The most fre quent her ed i tary ab nor ma lities in cases of throm bo em bo li sm are fac tor V Le i den (FVL, Arg506Gln) and pro throm bin 20210G>A (FII 20210G>A) ge ne mu ta ti ons.5 Even if a sin gle he te - rozy go te mu tant ge ne is not pro trom bo ge nic per se, it can trig ger throm bo sis along with ot her her ed i tary de fects or en vi ron men tal pre di posi ti on. In other words, throm bo sis oc curs as a re sult of in terac ti on be tween her ed i tary and ac qu i red fac tors.

The fre quency of fac tor V Le i den (FVL) mu ta - tion in throm bo phi lic pa ti ents is 40-60%. This her ed i tary abnor ma lity is seen at a ra te of 7% in Eu rope an pop u la tion and 4,6-7,1% in Tur key.6,7 Some re se arch ers in ves ti ga ted the ro le of the - se two va ri ant ge nes (Fac tor V Le di en and pro throm bin 20210G>A) in ar te ri al throm bo sis such as those in myo car di al in far c ti on.

Ho we ver, des pi te the well known pro throm - bo tic ef fects, as so ci a ti on bet ween fac tor V Le i den mu ta - tion in throm bophilic pa ti ents is still not cle ar ly es tab - lis hed.8 Some re se arch ers in ves ti ga ted the role of these two vari ant genes (Fac tor V Led i en and pro throm bin 20210G>A) in ar te ri al throm bos is such as those in myo car di al in far c ti on.

How ever, de spite the well known pro throm - bo tic ef fects, as so ci a ti on be tween fac tor V Le i den mu ta - tion and ar te ri al throm bo em bo lic events is still not clearly es tab - lis hed.8 Our ca se was screened for her ed i tary throm - bo phili a but no ano maly was fo und, the only risk fac tor was oral con tra cep ti ve use. War fa rin was
prescribed and the patient was scheduled for outpatient follow up.

We thought that palpable pulsation of the right lower extremity was due to adequate arterial collateral circulation in spite of near complete occlusion of the abdominal aorta and that pulselessness of the left lower extremity was caused by thromboembolization from the abdominal aorta. On the other hand, we also thought that the right femoral arterial embolization occurred at the second hour of the postoperative period was resulted from thrombectomy.

As a result, it should be considered that oral contraceptive drugs may lead to both arterial and venous serious thromboembolism in young female individuals and therefore the clinicians must be careful about these complications during the therapy.

REFERENCES