Abstract: We describe the case of a woman with a history of active tabagism and on the oral contraceptive Yasmin®, presenting in the Post-Anesthesia Care Unit (PACU) with a cardiac arrest due to massive pulmonary embolism following transforaminal lumbar interbody fusion surgery. The patient had preoperatively several risk factors for deep venous thrombosis. This case-report emphasizes the value of a preoperative anesthetic visit and eventual temporary cessation of certain oral contraceptives in specific cases.

Key words: Deep venous thrombosis; pulmonary embolism; combined oral contraceptive; Yasmin®; preoperative anesthetic visit.

Clinical Case

A 45-years old woman with a history of hypothyroidism, overweight (BMI 27.9 kg/m² with 75 kg for 164 cm) and active tabagism (20-60 cigarettes per week) presents at the neurosurgery consultation for incapacitating lumbar radicular pain. The lumbosacral spine tomodensitometry shows severe spinal L5-S1 and right foraminal L4-L5 stenosis and moderate left L4-L5 stenosis, due to a bilateral spondylolysis L4 and L5, an anterolisthesis L5 grade III and L4 grade I. Following patient informed consent, the decision to perform a transforaminal lumbar interbody fusion (TLIF) was made.

At the preoperative anesthetic visit, 8 days before surgery, the patient complained of bilateral sciatic pain with normal leg flexibility. She had no other symptoms. She was on a thiazide diuretic, and on a combined oral contraceptive Yasmin® containing Ethinyloestradiol and Drospirenone. Cardiopulmonary examination was normal. No preoperative coagulation testing was performed as she showed normal values two years earlier.

Upon arrival in the operating room, the patient wore compression stockings. The intervention took place in the prone position. The surgery lasted more than 8 hours and was uneventful. At the end of the procedure, the patient was turned back into the supine position and extubated without any problems.

Six minutes upon arrival in the PACU, the patient had a cardiac arrest. Cardiopulmonary resuscitation was started immediately, with a no-flow time equal to 0. Uninterrupted chest compressions, endotracheal intubation, as well as arterial line and central venous catheter insertion were performed. Return of spontaneous circulation was observed with a low-flow time equal to 25 minutes. However, the patient remained hemodynamically unstable. Despite vascular filling, a total dose of 10 mg of epinephrine and external cardiac compressions, no effective circulation could be restored. A transesophageal echocardiography was then realized, showing a massive thrombus invading the right atrium and right ventricle.

The patient was transferred to the cardiac surgery operating room and cardiopulmonary bypass was initiated 76 minutes after the initial cardiac arrest. The thrombus was surgically removed. After completion of the surgery and due to the impossibility to wean off cardiopulmonary bypass, extracorporeal life support was initiated. At this moment the patient showed clinical and biological signs of disseminated intravascular coagulation, and necessitated massive transfusion and a neurosurgical revision for hemostasis in the left lateral position.

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During cardiac surgery, the bilateral electroencephalogram (EEG) obtained by the cerebral monitor NeuroSENSE® remained isoelectric during 1 hour.

In the postoperative period an EEG and somesthetic evoked potentials were performed, showing absence of any cortical activity. In agreement with the family, the extracorporeal life support was stopped and comfort care was established. The patient died on the third postoperative day.

**Discussion**

The occurrence of deep venous thrombosis has been associated with the consumption of combined oral contraceptives (1, 2, 3). The risk is even increased in the presence of other risk factors such as tabagism, obesity, coagulation abnormalities, family history, hypothyroidism (4, 5)…

In this regard, the oral Ethinyloestradiol and Drospirenone containing contraceptive Yasmin® has been the subject of several publications, suggesting an increased risk of deep venous thrombosis (6, 7, 8, 9) and pulmonary embolism (8, 10, 11, 12). Moreover, its combination with tobacco consumption seems devastating (4).

However, other studies could not show any significant difference between oral contraceptives with or without Drospirenone with regard to the occurrence of deep venous thrombosis (13, 14, 15, 16).

Our patient suffered since several months from bilateral sciatic pain and was therefore limited in her daily physical activities.

Considering the huge thrombus discovered by the transesophageal echocardiography, it is more than plausible that she suffered from deep venous thrombosis before the start of the surgery. In the presence of active smoking, chronic Yasmin® intake, and a very limited physical activity, a preoperative doppler ultrasonography of the legs would have detected a deep venous thrombosis. On the other hand, discontinuation of the oral contraceptive and if possible smoking should have been discussed with the patient at the moment of the preoperative visit. There are currently no studies evaluating the eventual benefits of stopping oral contraceptives before surgery. However, stopping oral contraceptives and replacement estrogens three weeks before surgery to two weeks after has been proposed by some cosmetic surgeons (17). In this case, stopping the oral contraceptive would have been wise considering her risk factors and the type of surgery she was going to undergo.

This case-report is also an illustration that patients undergoing elective spine surgery are indeed at risk of deep venous thrombosis and even pulmonary embolism despite the use of mechanical prophylaxis, such as the use of elastic stockings, which was the case in our patient. This has been illustrated in a retrospective study in patients undergoing elective spine surgery (18). Indeed, mechanical prophylaxis and early ambulation reduced the incidence of symptomatic pulmonary embolism in the latter study but did not fully eliminate the risk.

In this regard, the North American Spine Society (NASS) Evidence-Based Guideline on antithrombotic therapies in spine surgery recommends that the use of mechanical prophylaxis is a reasonable practice, but that there are no studies addressing this issue in a randomized fashion (19).

Therefore, a complete preoperative evaluation of patients at high risk of deep venous thrombosis is mandatory. Any risk factors that can possibly be eliminated prior to surgery, should be considered and discussed with the patient.

**Conclusion**

This case-report emphasizes the value of a preoperative anesthetic visit. In patients at high risk of deep venous thrombosis and undergoing major surgery, the discontinuation of oral contraceptives should be considered. A doppler ultrasonography can be justified to exclude the presence of a preoperative deep venous thrombosis.

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