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**Abstract.** The antipsychotic drug risperidone, which is extensively used, has also many side effects, as increased risk of stroke, thrombosis, and pulmonary embolism have been reported. We present a case of a 38 year-old-woman with psychiatric disorder who got worse in her home and died in the hospital. Throughout autopsy, during the internal examination, multiple thrombi in the pulmonary artery branches were observed; however, there were no pathology findings in the lower extremity veins. Blood chemistry test revealed 4 ng/ml of risperidone, 37 ng/ml of quetiapine and atropine; chemical examination of urine detected atropine, quetiapine, risperidone. Death occurred due to acute massive pulmonary thromboembolism. We aimed to discuss this case with autopsy and histopathologic findings, laboratory results in medicolegal literature.

**Keywords:** pulmonary thromboembolism; risperidone; death.

**Problem statement and analysis of the recent research**

Risperidone is an extensively used antipsychotic drug; however, due to hyperactivation of blood platelets, there have been reported many side effects including increased risk of stroke, thrombosis, pulmonary embolism [1]. Pulmonary thromboembolism is a true medical emergency; pulmonary hypertension progresses rapidly thereby leading to right-sided heart failure which may be the cause of death [2]. Some antipsychotic agents have been reported as a risk factor for thromboembolism in adult patients with psychiatric disorders [3].

**The objective** of the research was to discuss this case with autopsy and histopathologic findings, laboratory results in comparison with medicolegal literature.

**Case report**

We present a case of a 38 year-old-woman with psychiatric disorder who got worse in her home and died after admission to the public hospital. Autopsy was mandated by local prosecutor after final investigation. Throughout autopsy, during the external

examination, ecchymosis due to the catheter on the bilateral medial part of the wrists and bilateral dorsum of the hands, and the areas of skin burn on the chest due to extensive defibrillation were detected. During the internal examination, petechial haemorrhages on the surface of the lungs, pulmonary congestion and edema, massive thromboembolism, multiple thrombi in pulmonary artery branches were observed (Fig. 1, 2) and there were no pathology findings in the lower extremity veins. In the larynx and trachea, there were mucoid secretions.

Histopathological examination in sections of the lungs revealed edemas, congestion and thrombi in the lumen of the large and small branches of the pulmonary artery vessels adhering to the wall of the intima vessels. Blood chemistry test revealed 4 ng/ml of risperidone, 37 ng/ml of quetiapine and atropine; chemical examination of urine detected atropine, quetiapine, risperidone. Death was reported to occur due to acute massive pulmonary thromboembolism.

**Discussion**

Risperidone is an atypical antipsychotic drug that belongs to the chemical class of benzisoxazole derivatives and is used to treat a number of psychiatric diseases, such as schizophrenia, schizoaffective disorder, mixed-manic states associated with bipolar disorder and irritability in children with autism [4]. The side effects in the patients receiving risperidone are numerous and sometimes fatal [4]. Although the causes of death associated with the use of risperidone were different, most of them appeared to be related either to infections or cardiovascular events [4]. Venous thromboembolism (VTE) is a relatively common cardiovascular disease and pulmonary embolism ranks second among causes of out-of-hospital sudden death [4, 5]. Among a number of inherited and acquired risk factors, antipsychotic therapy is a well-known iatrogenic risk factor for VTE [4]. Although conventional agents have been associated with



**Fig. 1.** Massive thromboembolism



**Fig. 2.** Multiple thrombi in the pulmonary artery branches

enhanced aggregation of platelets, atypical antipsychotic agents have not been tested systematically [3, 6]. Recent in vitro data from the manufacturer of risperidone do not confirm a direct effect of risperidone on human platelet function, plasma coagulation, and fibrinolysis [3, 7]. However, atypical agents possess a high affinity for the serotonin receptor type 2A, and serotonin-induced platelet aggregation may be affected [3, 8]. Evidence also exists that lupus anticoagulant and anticardiolipin antibody levels may be raised in the patients taking conventional antipsychotic agents [3, 9]. Venous stasis can be exacerbated by excessive sedation [3, 10]. This presentation will impact the forensic science community by providing an understanding of the importance of atypical antipsychotic agents which appear to increase the risk of thromboembolism

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