

Research Article

Asthma-Like Symptoms in Young Women Under Hormonal Contraception: Pay Attention to Pulmonary Embolism

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Abstract

Background: Combined contraceptives in young women (including estrogen plus gestagen) increase the risk for venous thromboembolism.

Objective: Pay attention to pulmonary embolism (PE) in young women with asthma-like symptoms (ALS) and exposed to hormonal contraception.

Material and Methods: Between January 2000 and May 2014, twenty (20) female patients under hormonal contraception were admitted to our intensive care unit (ICU) with ALS (acute dyspnea, tachypnea, cough, diffuse wheezing) but with a discharge diagnosis of PE.

Results: Patients arrived at our ICU with ALS and they were symptomatically treated with oxygen and nebulized bronchodilators. In all cases, because of their history, Venous Doppler examinations of the lower extremities revealed evidence of deep venous thrombosis (DVT) and pulmonary angiography confirmed the diagnosis of PE. Anticoagulation with low molecular weight heparin started immediately after diagnosis.

Conclusion: We underline the importance of keeping a high suspicion of PE in women under hormonal contraception admitted to the emergency department with ALS.

Keywords: Contraceptives; Acute Dyspnea; Wheezing; Asthma-Like Symptoms; Pulmonary Embolism; Deep Venous Thrombosis

Abbreviations

PE: Pulmonary Embolism;

DVT: Deep Venous Thrombosis;

ALS: Asthma-Like Symptoms;

CT-PA: Pulmonary Angiography;

VQ scan: Lung ventilation/Perfusion Scan;

ICU: Intensive Care Unit

Introduction

Oral contraceptives became a popular method of birth control in the mid-1960s, and their safety has been improved over the years with changes in their dosage, chemical composition and route of administration. However, concerns about their safety have remained. The combination of estrogens and gestagens increase the risk for Venous or Arterial Thromboembolism. The clinical presentation of the first condition is mainly DVT or PE, while the latter condition may present as Acute Myocardial Infarction or Cerebrovascular accident [1-3].

PE is often a fatal condition and the prognosis is poor because the diagnosis is difficult and usually delayed, as a result of clinical similarity with other acute pulmonary or cardiac conditions. Very often, young women that are under combined oral contraceptives and present at the emergency departments with symptoms of bronchoconstriction, are initially treated for acute dyspnea and wheezing [4,5]. Because of the common use of hormonal contraception among healthy women, it is fundamental to early diagnose the condition and start prompt treatment [6-8].

Material and Methods

In this retrospective research, we present 20 cases of young women admitted to our unit with ALS and with a discharge diagnosis of PE. Between January 2000 and May 2014, twenty (20) female patients with mean (SD) age 32.5 (± 6.9) years, presented at the ICU with ALS (acute dyspnea, tachypnea, cough and diffuse wheezing). Seventeen patients (85%) were using combined oral contraceptives (ethinylestradiol + desogestrel) for more than 6 months (8-12 months), while 3 patients (15%) had used the emergency contraceptive treatment ("morning after pill", levonorgestrel). They were initially diagnosed and symptomatically treated with short-acting β -agonists, anticholinergics and oxygen.

Results

Our patients arrived at the ICU with ALS (i.e. cough, fever, acute dyspnea, sinus tachycardia, tachypnea, hypoxemia - hypocapnia and diffuse wheezing). 55% of the patients (11) had severe pleuritic chest pain while all of them presented a respiratory rate >20 . ECG and chest X-ray findings compatible with PE were present in only 4 cases (20%) while none of the patients presented pronounced hemoptysis. Ten patients (50%) were smokers but none had previous medical history of dyspnea or risk factors for thromboembolic disease. None was obese (body mass index ≥ 29.0 kg/m²). Seventeen patients (85%) were using combined oral contraceptives (ethinylestradiol+desogestrel) for more than 6 months (8-12 months), while 3 patients (15%) had used

the emergency contraceptive treatment ("morning after pill", levonorgestrel). The time interval between intake of the 'morning after pill' and onset of PE was 7-10 days. Laboratory tests were not indicative for PE; however in 3 cases the serum glutamic oxaloacetic transaminase (SGOT) level and LDH were mildly elevated. D-dimer levels were mildly elevated in half of the cases (700 ± 50 ng/ml), while in the other half they were within normal range (300 ± 80 ng/ml).

Venous Doppler examinations of the lower extremities revealed evidence of DVT in all cases. Based on their medical history and presentation, a presumptive diagnosis of PE was made, and was confirmed in all cases by the positive findings in CT pulmonary angiography (CT-PA), pulmonary angiography and lung ventilation/perfusion scan (VQ scan). The mean (SD) time interval between the initial visit and the definitive diagnosis of PE was 24.8 (± 8.2) hours. Screening for thrombophilia was performed 24 hrs after definitive diagnosis of PE and included factor V Leiden, protein C, S deficiency prothrombin G20210A mutation, antithrombin deficiency. Anticoagulation with low molecular weight heparin (Tinzaparin 175 iu/Kg once daily) started immediately after diagnosis. Patients were advised to stop the use of hormonal contraception.

Discussion

Hormonal contraceptives are a popular method of contraception, but the use of combined oral contraceptives has been associated with an increased risk for DVT and PE [9-11]. Several studies have demonstrated that oral contraceptives with desogestrel and gestodene imply a higher risk of venous thromboembolism than oral contraceptives with levonorgestrel [12] while only two studies did not confirm this difference [13]. Recently, research also demonstrated that pills with drospirenone imply a risk comparable with those with desogestrel or gestodene [14].

In our study all patients who were under hormonal contraception were submitted to Venous Doppler examinations of the lower extremities. Tests revealed evidence of deep venous thrombosis in all cases. PE was proven based on abnormal CT-PA, pulmonary angiography and VQ scan. None of the patients described had any predisposing factor for thromboembolic disease, screening for thrombophilia was negative and there was no past medical history of ALS in any of them. Although evidence suggests that gestagen only pills do not increase the risk for venous thromboembolism, three of our patients had used levonorgestrel. The time interval between intake of the 'morning after pill' and onset of PE was 7-10 days. The symptoms and signs of PE are highly variable, nonspecific and common among patients with and without PE. Thus, additional testing is needed to confirm or exclude the diagnosis of PE. Moreover, evidence suggests the release of inflammatory mediators, resulting in surfactant dysfunction, atelectasis, and functional intrapulmonary shunting in patients with PE [15]. In our patient group (females, use of hormonal contraception), we found a high incidence of atypical PE. A possible mechanism could be hypersensitivity to ethinylestradiol, desogestrel or levonorgestrel resulting in increased levels of bronchoconstrictive and inflammatory

mediators (leukotrienes, histamine, interleukin (IL)-8), but this topic warrants further study. None of our patients was aware of the possibility of thromboembolic disease while on hormonal contraception. Thus, women who use contraceptives should get information from their healthcare provider, concerning possible side effects. Especially, providing contraceptive services to adolescent females requires planning and forethought is difficult at this age without monitoring and adult support. The family may be a basic part of the whole plan in collaboration with the healthcare provider. The adolescent should be counseled about potential adverse effects and their treatment. Moreover, should be given an opportunity to provide her medical history and to obtain gynecological and sexual information directly from the clinician [16]. Programmatic and policy initiatives should focus on improving adolescents' education about contraception (methods, side effects, etc.). Greek adolescents can be sexually active at a young age and they need sexual education [17]. In our study, because of social reasons there were difficulties in taking medical history concerning the use of drugs.

Our research has several limitations. Our conclusions would be more reliable if we had enrolled a control group of 20 other females with PE not taking contraceptives. The timing of thrombophilia screening was suboptimal (current use of hormonal contraception, within 3 months after venous thromboembolism).

Conclusion

In summary, we underline the importance of carefully examining women under hormonal contraception presenting in the emergency department with ALS, especially if they haven't had any past medical history of ALS. In such cases, failure of initial treatment for acute dyspnea and wheezing as well as deterioration of patient's condition impose an emergent need to pay attention for PE and thus making a priority the proper diagnosis through screening (DVT, CT-PA, VQ scan). Moreover young women and especially adolescents who use contraceptives should get information from their healthcare providers concerning possible side effects and early warning signs and symptoms.

Acknowledgement

Informed consent was obtained from the patients for publication.

Conflict of Interest

All authors declare to have no conflict of interest.

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