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Deep Vein Thrombosis Accompanied by Acute Bacterial Infection, Hypercholesterolemia and Grade I Obesity in a 20-Year-Old Man in a Hospital

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ABSTRACT

Backgorund: Deep vein thrombosis (DVT) is a condition in which thrombus forms in the inner veins, especially the lower legs, which can cause serious complications in the form of pulmonary embolism. Risk factors for DVT can include immobilization, hemostasis disorders, metabolic disorders, and systemic diseases that affect vascularization. **Method:** In certain cases, DVT can appear at the same time as other diseases that aggravate the clinical course. It was reported that a 20-year-old man with the main complaint was pain and swelling in the lower limbs since a few days before being admitted to the hospital. Patients also complain of high fever and bleeding gums. Physical examination found that the lower limbs were swollen, tender, and warm. **Results:** The results of the supporting examination showed the presence of thrombus in the profunda vein through doppler ultrasound, so the diagnosis of DVT was established. Hematological examinations showed neutrophilia, thrombocytopenia, lipid profiles showed increased total cholesterol, while ECG examinations supported the presence of myocardial ischemia. Patients were managed with a multidisciplinary approach: antibiotics, anticoagulants, and risk factor control. **Conclusion:** This case illustrates the complexity of treating DVT in young patients with high-risk comorbidities, as well as emphasizing the importance of early detection

and individualized therapy to prevent further complications.

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Introduction

Deep vein thrombosis (DVT) is a formation of thrombus in the inner veins, especially in the lower extremities, which if left untreated can lead to pulmonary embolism or postthrombotic syndrome. Although DVT is more common in older people, cases in young people, including men in their twenties, can still occur although relatively rarely (Kreidy *et al.*, 2012).

In the young age group (< 40 years), men tend to experience DVT more often than women. A retrospective study in a hospital in China showed that in patients with lower extremity DVT who were less than 30 years old, the proportion of men was much higher than in the older age group. The introduction of DVT in young men is often delayed due to non-specific symptoms, such as swelling of the lower limbs, discomfort or pain that is easily mistaken for a muscle injury or cramp. This delay in diagnosis can increase the risk of complications, including relapse and postthrombotic syndrome that impact the patient's quality of life (Zhang et al. 2024).

In this regard, case studies of DVT in men around 20 years of age are important to broaden the understanding of clinical characteristics, causative factors, as well as therapeutic evaluation and prognosis. This information can help medical personnel, particularly general practitioners, recognize early manifestations of DVT that are often not typical at a young age, such as leg pain, unilateral swelling, or a history of immobilization, trauma, and use of certain medications. This case report is present to fill a gap in the study due to the lack of data on the incidence of Deep Vein Thrombosis (DVT) in young patients who have a combination of unusual risk factors, namely acute bacterial infection, hypercholesterolemia, level I obesity, and myocardial ischemic symptoms (Sorensen 2007). The uniqueness of this case lies in the documentation of simultaneous interactions between inflammatory, metabolic, and cardiovascular factors that are rarely reported as causes of thrombosis in people around 20 years of age. This report aims to describe the case, evaluate the possible pathophysiological mechanisms that occur, as well as emphasize the importance of vigilance and early detection of DVT in young patients with metabolic comorbidities and acute infections, even without the commonly found thrombotic risk factors (Spasic 2021).

Objective

The purpose of this is to describe the clinical journey of a 20-year-old male patient with Deep Vein Thrombosis accompanied by acute bacterial infection, hypercholesterolemia, myocardial ischemia, and grade I obesity. The analysis was conducted to see the association between acute infections, dyslipidemia, obesity, and cardiovascular disorders to the occurrence of DVT. The discussion also contains the management given, both non-pharmacological and pharmacological, including multidisciplinary collaboration. The explanation is aimed at providing an understanding of the pathophysiological mechanisms and clinical implications in cases of DVT in young patients (Huang 2022; Jaya 2016; Kreidy et al. 2012).

Method

Types of Research

This study used a descriptive case study approach with the aim of describing and analyzing the incidence of Deep Vein Thrombosis (DVT) in male patients aged 20 years who experienced a combination of risk factors in the form of acute bacterial infections, hypercholesterolemia, myocardial ischemia, and grade I obesity.

Location and Time

The research was conducted in a hospital during the period from November 24 to October 02, 2025

Data Subject

The subject of the study was a 20-year-old male patient who was treated in hospital and diagnosed with DVT

Data Analysis Techniques

Data analysis was carried out in a descriptive manner by describing in depth the patient's clinical course, the results of the diagnostic examination, and possible pathophysiological mechanisms that occur based on the latest literature. This approach aims to provide a comprehensive understanding of the interaction of risk factors in this DVT case.

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Figure 1. Clinical Photo

Laboratory Examination Results

Laboratory tests show some important abnormalities. The patient's platelets were in the range of 24,000–60,000/mm³, indicating a fairly severe thrombocytopenia. Examination of leukocyte type counts showed that segmental neutrophils reached 85%, illustrating the presence of significant acute bacterial infections. The patient's lipid profile also showed abnormalities, namely total cholesterol of 232 mg/dL and LDL of 158 mg/dL, which indicated hypercholesterolemia. PT/INR is within normal limits, so no systemic coagulation disorders are found. The combination of laboratory

findings shows the existence of systemic inflammatory processes, the risk of atherosclerosis, and metabolic disorders that can worsen the process of venous thrombus.

Table 1. Summary of Meaningful Laboratory Results

Examination	Result	Normal	Interpretasi
Thrombositis	24–60 thousand/mm³	150–440 thousand	Thrombositopenia
Segmental neutrophils	85%	50–70%	Bacterial infections
Total cholesterol	232 mg/dL	<200 mg/dL	Hypercholesterolemia
LDL	158 mg/dL	<130 mg/dL	Risk of aterosclerosis

Results of Supporting Examinations

up to V6, leading to the diagnosis of anteroseptal myocardial ischemia and lateral wall. Thorax X-rays do not show heart or lung abnormalities. The most decisive supporting examination is a Doppler ultrasound, which shows that the femoral vein and left poplitea do not collapse during compression and that venous flow is not visible, which is a typical sign of the presence of a thrombus in the deep vein. These findings confirm the diagnosis of proximal DVT in accordance with clinical and laboratory findings.

Table 2. Summary of Supporting Findings

Examination	Findings	Clinical Meaning
ECG	T inverted V1–V6	Myocardial ischemia
Rontgen thorax	Usual	No changes in the structure of the lungs/heart
USG Doppler	Veins do not collapse, no flow	DVT femoropoplitea

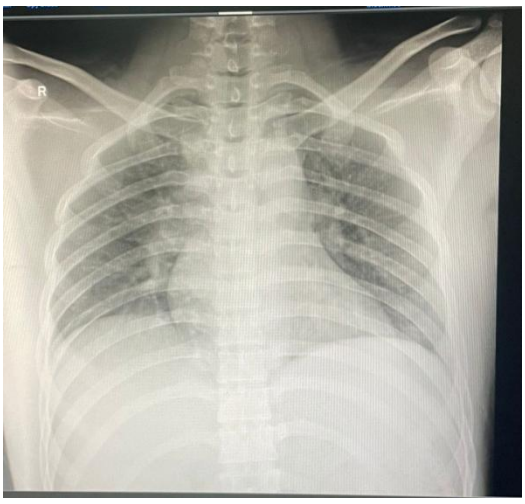

Figure 2. Rontgen Thorax

Cast does not enlarge

Normal sinuses and diaphragms

Pulmo : Hilus normal

Normal bronchovascular pattern

No visible soft patches

Impression:

Cor and Pulmo look normal

Governance

Management in patients includes pharmacological and non-pharmacological therapies. Pharmacologically, patients were given enoxaparin for five days as an initial anticoagulant therapy, followed by rivaroxaban for three months as maintenance therapy. Antibiotics ampicillin are given to treat accompanying bacterial infections. Atorvastatin is given to treat hypercholesterolemia, while diltiazem is given to control cardiovascular symptoms. Non-pharmacologically, patients are advised to lie down with leg elevation, use compression stockings, lifestyle changes such as quitting smoking, and weight loss to reduce the risk of recurrence and long-term complications (Waheed, Kudaravalli, and Hotwagner 2023).

Discussion

DVT is a condition in which thrombus forms in the deep veins, especially in the lower extremities. In these patients, DVT occurs at a relatively young age, i.e. 20 years, although most DVT occurrences generally occur in old age. However, some studies suggest that DVT can still occur at a young age if there are underlying risk factors, such as infection, dyslipidemia, obesity, or systemic inflammatory conditions. In this case, there are several risk factors that contribute to the occurrence of DVT, including acute bacterial infections, hypercholesterolemia, grade I obesity, and smoking habits.

The pathophysiology of DVT in these patients can be described through the Triassic Virchow, which includes venous stasis, endothelial damage, and hypercoagulability. Venous stasis occurs due to massive edema in the left leg that inhibits venous backflow. Endothelial damage may be triggered by inflammatory processes due to acute bacterial infections or hypercholesterolemia that causes chronic inflammation of the blood vessels. Meanwhile, a state of hypercoagulability arises due to systemic inflammatory processes, increased clotting factors in obesity, and the effects of smoking that worsen platelet aggregation (Ziyadeh and Mauer 2024).

The patient's clinical symptoms are unilateral swelling, erythema, increased local temperature, and pain according to the typical description of DVT. The difference in leg circumference of more than 3 cm and Homan's positive sign strengthen the clinical conjecture despite the low sensitivity. A Wells score of 4 puts the patient in the high-risk category of DVT, so supporting examinations are still needed for confirmation. Ultrasound Doppler examination showed veins that did not collapse during compression and did not show femoral venous flow and poplitea, which is objective evidence of the presence of deep vein thrombus (Alwi 2014; Cox and Roberts 2025; Jameson 2018).

On the other hand, the ECG results show signs of myocardial ischemia. This is relevant because the systemic inflammation and hyperlipidemia experienced by the

patient increase the risk of coronary atherosclerosis thus triggering ischemia. Studies show an increased risk of myocardial infarction in patients with DVT, so early detection and therapy are important.

The management given to patients is in accordance with the latest DVT therapy protocol, namely the administration of LMWH anticoagulants in the acute phase, then continued with DOAC as maintenance therapy. Compression therapy and early mobilization aim to prevent complications such as Post-Thrombotic Syndrome (PTS). Risk factors such as obesity and smoking habits should be addressed as they are associated with DVT recurrence and worsening prognosis.

Conlusion

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