Review

Incidence of deep vein thrombosis in erysipelas or cellulitis of the lower extremities

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Abstract

The incidence of deep vein thrombosis (DVT) in patients with erysipelas and cellulitis of the lower extremities is unknown. As such, the indication and efficacy of prophylactic anticoagulation for prevention of DVT in these patients is unclear. The main goal of this review is to provide an estimate of the incidence of DVT in erysipelas and cellulitis based on existing literature.

A comprehensive search of the electronic sources: MEDLINE, EMBASE, CINAHL, LILAC and Cochrane without any language limitation was performed from 1950 to April 2011 for articles focused on the occurrence of DVT in cellulitis or erysipelas of the lower extremities.

The selected studies were divided into two groups according to presence or absence of systematic investigation for DVT. Those studies in which the patients received prophylactic or therapeutic anticoagulants before a diagnosis of DVT were excluded.

The reported incidence rate of DVT in patients with erysipelas or cellulitis of the lower extremities is highly variable, ranging from 0 to 15%. In this review, the overall incidence rates of DVT in studies with and without systematic investigation for thromboembolism were 2.72% (95% CI: 1.71–3.75%) and 0.68% (95% CI: 0.27–1.07%), respectively.

Given the low reported overall incidence of DVT, neither routine prophylactic anticoagulation nor systematic paraclinical investigation for DVT is indicated in low risk patients with erysipelas or cellulitis of the lower extremities. DVT should still be considered in patients with high pretest probability or other thromboembolic risk factors.

Introduction

Cellulitis is usually defined as inflammation of subcutaneous tissue with a proven or assumed infective cause. Some authors consider erysipelas as a separate entity and define it as a bacterial infection of dermis and upper subcutaneous tissue which can be differentiated from cellulitis by a well-defined, raised margin and lack of firm, deep and tender induration. However, as instances of deep extension of erysipelas and superficial presentation of cellulitis make differentiation very difficult, most clinicians consider erysipelas as a form of cellulitis. The lower extremities are the most common sites of both cellulitis and erysipelas.

The few epidemiological studies in hospital settings and two more recent studies in primary care clinics suggest a marked increase in the incidence of erysipelas and cellulitis during recent decades. A study conducted in northern Belgium and Flanders documented an increase in incidence per 1000 subjects from 1.88 in the years 1994–1995 to 2.49 in 2003–2004.

Superficial and deep vein thromboses are among the reported complications of cellulitis and erysipelas. Inflammation and infection (including cellulitis) may predispose patients to deep vein thrombosis (DVT) by causing local damage to the intimal wall of the veins. Stasis caused by increased immobility and hypercoagulability related to inflammation may also contribute to thrombosis. Unfortunately, patients with cellulitis and erysipelas suffer many of the same lower extremity symptoms as patients with DVT and this creates further potential for misdiagnosis.

Frequencies of the association between DVT and cellulitis or erysipelas reported in the literature are highly variable, ranging from 0% to 15%. Accordingly, it is unclear whether patients with erysipelas or cellulitis of the lower extremities may benefit from prophylactic anticoagulation to prevent DVT and/or pulmonary embolism,
or systematic investigation to rule out concomitant DVT. The main objective of this review is to provide an estimate of the incidence of DVT in patients with cellulitis or erysipelas based on the available literature.

**Materials and methods**

We performed a comprehensive search of the electronic resources (from 1950 to April 2011) MEDLINE, EMBASE, CINAHL, LILAC and the Cochrane Databases for relevant articles without any language limitation, using combinations of text words and medical subject headings (MeSH) terms: “cellulitis”, “erysipelas”, “incidence”, “complication”, “venous thrombosis”, “deep vein thrombosis”, “thrombophlebitis”, “phlegmon”, and “upper/lower extremities DVT”. Full-text copies of all eligible articles focusing on the occurrence of DVT in patients with cellulitis and/or erysipelas were retrieved. A number of the selected articles were in French and were translated into English before assessment. Citations of the included studies were checked for potentially relevant articles that were not identified by the original search. Studies in which patients had received prophylactic or therapeutic anticoagulants before being diagnosed with DVT were excluded.

**Results**

Studies reporting the occurrence of DVT in patients with erysipelas or cellulitis of the lower extremities were categorized into two groups according to whether a systematic investigation for DVT had been performed in all patients with erysipelas or cellulitis (Table 1), or whether patients had been investigated for DVT based only on subsequent symptoms and clinician suspicion (Table 2). None of the patients in either group had received routine prophylactic anticoagulation or therapeutic anticoagulants before being diagnosed with DVT.

Lindblad et al. evaluated the 125I-fibrinogen uptake test as a diagnostic tool for DVT in 43 patients with erysipelas of the leg. Sixteen patients showed increased uptake compatible with DVT, but the diagnosis of DVT was confirmed in only three cases (7.0%) by performing venography in 11 patients. Venography was not performed in five patients because of septicemia in three cases, refusal in one, and an unsuccessful procedure in another. The authors concluded that the 125I-fibrinogen uptake test was too nonspecific to be used for the diagnosis of DVT in patients with erysipelas. Jeune performed systematic venography in a small series of 10 patients with erysipelas and found no cases of DVT. Mahe et al. performed compression ultrasound (US) with pulsed Doppler imaging within the first 48 hours of hospitalization in 40 patients with erysipelas of the leg. In patients with high pretest probability for DVT but negative or indeterminate US findings, venography was performed within 24 hours. In three cases, a second US study was performed 10–15 days later as a result of persisting edema, but all were negative for DVT. Deep vein thrombosis, ipsilateral to erysipelas, was found in six patients (15.0%). To our knowledge, this is the highest incidence of DVT in patients with erysipelas or cellulitis of the leg reported in the literature. No patients suffered subsequent pulmonary embolism. Thirteen patients were considered to be at high risk for DVT (because of a history of DVT or prolonged immobilization prior to erysipelas). Five of the six diagnosed DVT cases were among the high-risk patients. Bendick performed US in 207 patients with clinically evident cellulitis of the lower extremities (both outpatients and inpatients). Only two patients (1.0%) were found to have an acute DVT isolated to intramuscular soleal sinuses of the tibioperoneal system. Four other patients were diagnosed with superficial thrombophlebitis involving the greater saphenous vein. Perrot et al. reported a series of 155 hospitalized patients with cellulitis or erysipelas of the legs investigated by compression US plus color Doppler imaging, both at the time of admission and at discharge from hospitalization in 40 patients with erysipelas of the leg. In 11 patients, venography was performed only when the compression US revealed a possible DVT. No false-positive compression US findings were observed. The authors concluded that compression US with pulsed Doppler imaging was a reliable test for the diagnosis of DVT in patients with cellulitis or erysipelas.

**Table 1** Incidence of deep vein thrombosis (DVT) in patients with erysipelas or cellulitis of the lower extremities in studies in which a systematic investigation for DVT was performed

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Year</th>
<th>Patients, n</th>
<th>DVT, n</th>
<th>DVT, % (95% CI)</th>
<th>Diagnostic imaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lindblad et al.</td>
<td>1988</td>
<td>43</td>
<td>3</td>
<td>7.0 (1.5–19.1)</td>
<td>125I-fibrinogen uptake test + venography</td>
</tr>
<tr>
<td>Jeune</td>
<td>1991</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>Venography</td>
</tr>
<tr>
<td>Mahe et al.</td>
<td>1992</td>
<td>40</td>
<td>6</td>
<td>15.0 (5.7–29.8)</td>
<td>Compression US + Doppler</td>
</tr>
<tr>
<td>Bendick</td>
<td>1996</td>
<td>207</td>
<td>2</td>
<td>1.0</td>
<td>Compression US + Doppler</td>
</tr>
<tr>
<td>Perrot et al.</td>
<td>2001</td>
<td>155</td>
<td>4</td>
<td>2.6 (0.7–6.5)</td>
<td>Compression US + Doppler</td>
</tr>
<tr>
<td>Bersier &amp; Bounaumeaux</td>
<td>2003</td>
<td>431</td>
<td>7</td>
<td>1.6 (0.6–3.3)</td>
<td>Compression US + Doppler</td>
</tr>
<tr>
<td>Rabuka et al.</td>
<td>2003</td>
<td>74</td>
<td>2</td>
<td>2.7</td>
<td>Compression US + Doppler</td>
</tr>
<tr>
<td>Zaghoudi et al.</td>
<td>2007</td>
<td>30</td>
<td>3</td>
<td>10.0 (2.1–26.5)</td>
<td>Compression US + Doppler</td>
</tr>
</tbody>
</table>

*Balanced (weighted) incidence: 2.72% (95% CI 1.71–3.73)
95% CI, 95% confidence interval; US, ultrasound*
They identified four DVTs. Ventilation–perfusion lung scans in two of the DVT cases revealed (asymptomatic) pulmonary embolism. More than 50% of patients in this study had at least one risk factor for DVT. Bersier and Bounameaux performed a large retrospective study in 431 patients with clinical cellulitis who underwent compression US with and without continuous-wave Doppler imaging for suspected DVT. Three patients (0.7%) showed associated DVT in the initial assessment and four other cases were diagnosed with associated DVT within a three-month follow-up, giving a total of seven cases of DVT (1.6%). At least one risk factor for venous thromboembolism (VTE) was found in all patients diagnosed with associated DVT.

Rabuka et al. studied 109 of 542 emergency department patients referred for a duplex scan of the lower extremities who had been given an initial diagnosis of “DVT vs. cellulitis”. Patients were eligible for inclusion if the treating physician had documented clinical suspicion for cellulitis in the differential diagnosis (terms included “cellulitis”, “soft tissue infection”, “skin infection”, “erysipelas” and “lymphangitis”) or if the clinical description included all four elements of the accepted clinical criteria for diagnosis of cellulitis (erythema/redness, pain/tenderness, swelling/edema, hot/warm area). Subjects were also eligible if they had been assigned a final diagnosis of cellulitis and had been treated with antibiotics after a negative duplex scan. Patients with bilateral leg symptoms were excluded from the study. Nineteen patients were given a final diagnosis of DVT (1.6%). At least one risk factor for venous thromboembolism (VTE) was found in all patients diagnosed with associated DVT.

A smaller number of studies report complications of erysipelas and cellulitis that include thromboembolism, without performing a systematic investigation for DVT (Table 2). Investigation for DVT was performed only in the presence of clinical suspicion.

Barriere et al. reported a series of 44 patients diagnosed with erysipelas of the lower extremities. Only one case of DVT (2.3%) was detected. Chartier and Grosshans reviewed 529 cases of erysipelas referred to a dermatology clinic. Five cases of DVT (0.9%) and seven cases of superficial thrombophlebitis were subsequently diagnosed as complications of erysipelas. Jeune, in a letter to the editor, reported on a series of 111 patients with erysipelas of the leg. No thromboembolic complications including DVT were noted. More recently, in a large retrospective study, Zaraa et al. found only five cases (0.5%) of DVT confirmed by Doppler US in 946 patients with erysipelas or cellulitis.

Discussion

Superficial and deep vein thromboses have been frequently reported as coexisting with or complicating erysipelas and cellulitis. However, as the two conditions share a number of presenting features (lower extremity pain, erythema, swelling), there is the potential that one might be misdiagnosed for the other. The incidence of DVT in patients with suspected erysipelas or cellulitis has been repeatedly but inadequately investigated during recent decades and reported frequencies range from 0% to 15%. These studies utilized a variety of imaging procedures with different levels of technology, sensitivity and specificity. It has been postulated that erysipelas and cellulitis provide a favorable environment for thrombosis because of initial immobility, venous stasis caused by edema, and concomitant inflammatory activation of the coagulation pathway.

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Year</th>
<th>Patients, n</th>
<th>DVT, n</th>
<th>DVT, %</th>
<th>Diagnostic imaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barriere et al.</td>
<td>1977</td>
<td>44</td>
<td>1</td>
<td>2.3</td>
<td>Unknown</td>
</tr>
<tr>
<td>Chartier &amp; Grosshans</td>
<td>1990</td>
<td>529</td>
<td>5</td>
<td>0.9</td>
<td>Ultrasound</td>
</tr>
<tr>
<td>Jeune</td>
<td>1991</td>
<td>111</td>
<td>0</td>
<td>0</td>
<td>N/A</td>
</tr>
<tr>
<td>Zaraa et al.</td>
<td>2004</td>
<td>946</td>
<td>5</td>
<td>0.6</td>
<td>Ultrasound</td>
</tr>
</tbody>
</table>

aBalanced (weighted) incidence: 0.68% (95% CI 0.27–1.07)
A decrease in fibrinolysis and factor XII levels (with a resultant increase in fibrinogen levels), activation of some plasma serine proteinases, local fibrin deposition, and superficial micro-thrombosis in erysipelas has been reported. Blaivas et al. hypothesized that local damage to the intimal wall of the veins by inflammation and infection may predispose patients to DVT. Russell et al. reported cellulitis as an “additional” risk factor that had not been reported previously and as one of the significant independent predictors of VTE. They found a prevalence of cellulitis of 3.3% in 1330 cases of DVT compared with 0.3% in the normal population.

By contrast, other investigators, such as Perrot et al., argue that high venous flow in the affected extremity prevents erysipelas from becoming a risk factor for thromboembolism.

Given the conflicting data derived from small studies, opinions on whether patients with erysipelas or cellulitis should routinely receive anticoagulant prophylaxis and/or be screened for DVT vary. We undertook this review in order to provide best estimates of the incidence of DVT in this population.

### Table 3: Incidences of deep vein thrombosis (DVT) and associated risk factors in patients with erysipelas or cellulitis of the lower extremities

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Year</th>
<th>Patients, n</th>
<th>DVT, n</th>
<th>Associated risk factors</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lindblad et al.</td>
<td>1988</td>
<td>43</td>
<td>3</td>
<td>Specified in DVT cases</td>
<td>Cardiovascular disease and varicose veins (n=1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Age &gt;70 years (n=3) Without associated risk factor (n=2)</td>
</tr>
<tr>
<td>Jeune</td>
<td>1991</td>
<td>10</td>
<td>0</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Mahe et al.</td>
<td>1992</td>
<td>43</td>
<td>6</td>
<td>Specified in DVT cases</td>
<td></td>
</tr>
<tr>
<td>Bendick</td>
<td>1996</td>
<td>207</td>
<td>2</td>
<td>Mentioned generally</td>
<td>Malignancy (n=30)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Early postop period (n=12)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Leg trauma (n=8)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Without associated risk factor (n=157)</td>
</tr>
<tr>
<td>Perrot et al.</td>
<td>2001</td>
<td>155</td>
<td>4</td>
<td>Mentioned generally</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Age &gt;70 years (n=77)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cancer (n=4)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Previous DVT (n=23)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Venous insufficiency with ulcers (n=23)</td>
</tr>
<tr>
<td>Bersier &amp; Bounamaux</td>
<td>2003</td>
<td>431</td>
<td>7</td>
<td>Specified in DVT cases</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Age &gt;70 years (n=3)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Immobilization (n=4)</td>
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<td></td>
<td></td>
<td></td>
<td>DVT family history (n=2)</td>
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<td></td>
<td></td>
<td>Previous VTE (n=3)</td>
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<td></td>
<td></td>
<td></td>
<td>OCP or estrogen (n=1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>At least one risk factor (all)</td>
</tr>
<tr>
<td>Rabuka et al.</td>
<td>2003</td>
<td>74</td>
<td>2</td>
<td>Mentioned generally</td>
<td>Varicose veins (15.8% of DVT cases; 4.2% of cellulitis cases)</td>
</tr>
<tr>
<td>Barriere et al.</td>
<td>1977</td>
<td>44</td>
<td>1</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>Chartier &amp; Grosshans</td>
<td>1990</td>
<td>529</td>
<td>5</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>Zaraa et al.</td>
<td>2004</td>
<td>946</td>
<td>5</td>
<td>Specified in DVT cases</td>
<td></td>
</tr>
<tr>
<td>Jeune</td>
<td>1991</td>
<td>111</td>
<td>0</td>
<td>?</td>
<td>Wells score: moderate (n=10), high (n=6) High scores in all DVT cases</td>
</tr>
<tr>
<td>Zaghoudi et al.</td>
<td>2007</td>
<td>30</td>
<td>3</td>
<td>Mentioned generally</td>
<td></td>
</tr>
</tbody>
</table>

VTE, venous thromboembolism; OCP, oral contraceptive pill.
Among the studies in which a systematic clinical investigation for DVT was performed in all patients (Table 1), the overall incidence of DVT was 2.72% (95% confidence interval [CI] 1.71–3.73%). Among the studies in which investigation for DVT was left to the discretion of the physician (Table 2), the overall incidence of DVT was 0.68% (95% CI 0.27–1.07%). Most of these studies were extracted from the French medical literature of the 1990s and early 2000s. During this period, the administration of prophylactic anticoagulants in non-study hospitalized patients with erysipelas was quite common.\textsuperscript{26,27}

Generally, most of the patients who developed DVT during the course of erysipelas or cellulitis had at least one risk factor for DVT\textsuperscript{16,18} (Table 3). For example, 13 of 40 patients, including five of the six patients diagnosed with DVT, in the study by Mahe \textit{et al.}\textsuperscript{16} had classical risk factors for DVT, such as a previous history of DVT or prolonged immobilization. Only one instance of DVT was diagnosed among the remaining 27 “low-risk” patients.\textsuperscript{16} Thus, we cannot conclude that development of DVT in these patients was related to their skin infection only.

Recommendations for the provision of VTE prophylaxis in medical conditions are stratified according to perceived risk by the American College of Chest Physicians\textsuperscript{28} and by the International Consensus group, including the International Union of Angiology (IUA) (issued as the International Consensus Statement – European guidelines).\textsuperscript{29} According to these guidelines, low-risk patients (i.e. those in whom the risk for DVT is <10%) do not need prophylactic anticoagulants but should be mobilized early. Moderate-risk (i.e. those with a 10–40% risk for DVT) and high-risk (i.e. those with a 40–80% risk for DVT) patients should receive specific anticoagulant prophylaxis and should also be mobilized early.\textsuperscript{28,29} According to the results of our review, the weighted incidences of both asymptomatic (2.72%) and symptomatic (0.68%) DVT in patients with cellulitis or erysipelas of the lower extremities are <10% and thus, in view of these accepted guidelines, these patients should be considered as low risk and, assuming that no other risk factors for VTE are present, as not requiring thromboprophylaxis. Early and aggressive ambulation is recommended in these patients.\textsuperscript{28,29}

In its consensus conferences on the management of erysipelas and necrotizing fasciitis (in 2000 and 2001), the French Society of Dermatologists suggested that the risk for DVT in erysipelas of the lower limb is small and does not justify the systematic use of thromboprophylaxis.\textsuperscript{30,31} Although the Society recommended early ambulation and the use of venous pressure stockings for these patients, it suggested preventive anticoagulant treatment only in the presence of an associated thromboembolic risk, as in any other acute infectious disease. In view of the low incidence of DVT, the Society concluded that systematic investigation for DVT in erysipelas patients is not necessary.\textsuperscript{30,31} Our study provides additional data supporting these recommendations.

\textbf{Limitations}

Our estimates of the incidence of DVT as a complication in cellulitis or erysipelas are based on observational studies that used a variety of imaging modalities. The majority of these studies utilized compression US plus Doppler imaging; the potential for false positive diagnoses in these studies is not insignificant, particularly for more distal DVTs, given the swelling and subcutaneous edema that usually accompany cellulitis and erysipelas. This may lead to an overestimation of incidence rates. Conversely, it should also be noted that a number of these studies did not follow their subjects beyond hospital discharge. As a result, we are unable to adequately capture longer-term rates of DVT associated with cellulitis and erysipelas, thus may underestimate the total burden of this complication. However, in the study of 431 patients by Bersier and Bounameaux\textsuperscript{14}, only four additional patients were diagnosed with DVT over a three-month follow-up. It is also important to note that our results do not confirm or refute a pathophysiologic relationship between cellulitis and DVT. Patients with cellulitis have a number of other potentially confounding characteristics that may be associated with DVT, including immobility, obesity, and other co-morbidities. Finally, given the significant overlap between the signs and symptoms of cellulitis and DVT (and the lack of clear diagnostic criteria for cellulitis), it is possible that some of the patients included in our analyses had isolated DVT without cellulitis. This would bias our results such that the low rate of cellulitis-associated DVT reported here would represent a slight overestimate. This would not change our final conclusions.

\textbf{Conclusions}

Based on our review of the literature, the overall incidence of DVT in patients with presumed cellulitis or erysipelas is very low. Accordingly, neither routine anticoagulant prophylaxis nor systematic investigation for DVT is indicated in patients with erysipelas or cellulitis of the lower extremities unless concomitant risk factors for DVT are present. Because the number of studies in the literature that specifically address the incidence of DVT in erysipelas and cellulitis is small, and the incidence that can be derived from these range from 0% to 15%, larger prospective studies are needed to confirm the results and conclusions discussed here.
Questions

1. Which one of the following statements is true about erysipelas and cellulitis?
   a. Erysipelas is considered as a separate entity by all authors
   b. Erysipelas is easily differentiated from cellulitis by clinical criteria
   c. Cellulitis usually has a well-defined and raised margin
   d. The lower extremities are the most common sites of cellulitis and erysipelas
   e. All of the above

2. The incidence of erysipelas and cellulitis during recent years:
   a. Has not changed
   b. Has increased in hospital settings but has not changed in primary care clinics
   c. Has increased in primary care clinics but has decreased in hospital settings
   d. Has increased in both hospital settings and primary care clinics
   e. Has decreased in both hospital settings and primary care clinics

3. The highest reported incidence of deep vein thrombosis (DVT) in patients with erysipelas or cellulitis of the leg is:
   a) 5%
   b) 10%
   c) 15%
   d) 20%
   e) 25%

4. The imaging procedure(s) most commonly utilized in systematic investigations for DVT in patients with erysipelas or cellulitis of the lower extremities is (are):
   a) Venography
   b) Compression ultrasound + Doppler
   c) $^{125}$I-fibrinogen uptake test ± venography
   d) (a) and (b)
   e) Compression ultrasound ± $^{125}$I-fibrinogen uptake test

5. The reported range of the incidence of DVT in patients with suspected erysipelas or cellulitis is:
   a) 0–15%
   b) 15–20%
   c) 20–25%
   d) 25–30%
   e) 30–35%

6. It has been postulated that erysipelas and cellulitis provide a favorable environment for thrombosis because of:
   a) Initial immobility
   b) Venous stasis caused by edema
   c) Concomitant inflammatory activation of the coagulation system
   d) Local damage to the intimal wall of the veins by inflammation and infection
   e) All of the above

7. In this review, the overall incidences of DVT in patients with erysipelas or cellulitis of the lower extremities diagnosed with and without systematic investigation were:
   a) 3.71% and 0.56%, respectively
   b) 5.33% and 0.85%, respectively
   c) 2.72% and 0.68%, respectively
   d) 2.33% and 0.37%, respectively
   e) 4.27% and 0.96%, respectively

8. According to the accepted international guidelines, which groups of the patients do not need prophylactic anticoagulants:
   a) Low-risk patients
   b) Moderate-risk patients
   c) High-risk patients
   d) Low- and moderate-risk patients
   e) None of the above

9. According to the results of this review, patients with erysipelas or cellulitis of the lower extremities:
   a) Do not need DVT prophylaxis
   b) Need DVT prophylaxis
   c) May need DVT prophylaxis according to the presence of other risk factors
   d) Need DVT prophylaxis only in severe infection
   e) None of the above

10. According to the Consensus Conference of the French Society of Dermatologists, in patients with erysipelas or cellulitis of the lower extremities:
    a) Systematic investigation for DVT is necessary
    b) DVT prophylaxis is not needed
    c) Only those with other risk factors need DVT prophylaxis
    d) All of the above
    e) None of the above

References


19 Mortazavi et al. Incidence of DVT in lower leg erysipelas or cellulitis. Review 7


Answer key

1. d.
2. d.
3. c.
4. b.
5. a.
6. c.
7. c.
8. a.