

Standard of care and guidelines in prevention and diagnosis of venous thromboembolism: medico-legal implications

Linee guida e buone pratiche accreditate nella prevenzione e diagnosi del tromboembolismo venoso: profili di responsabilità professionale

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Abstract

Concerning recent Italian laws and jurisprudential statements, guidelines application involves several difficulties in clinical practice, regarding prevention, diagnosis and therapy of venous thromboembolism. International scientific community systematically developed statements about this disease in order to optimize the available resources in prophylaxis, diagnosis and therapy. Incongruous prevention, missed or delayed diagnosis and/or inadequate treatment of this disease can frequently give rise to medico-legal litigation.

Riassunto

L'applicazione in ambito clinico delle linee guida e buone pratiche accreditate, alla luce delle recenti pronunce legislative e giurisprudenziali, presenta molteplici criticità, con particolare riferimento alla prevenzione, diagnosi e cura del tromboembolismo venoso. A fronte della com-

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plexità del fenomeno, della difficoltà di gestione, dei costi correlati alla conseguente morbilità e mortalità di tale entità clinica la comunità scientifica internazionale ha cercato di delineare delle regole di condotta universalmente condivise al fine di ottimizzare le risorse disponibili nella fase di prevenzione e gestione diagnostico-terapeutica. Al contempo, sempre più frequentemente vengono paventate ipotesi di responsabilità professionale per incongrua profilassi, mancata o ritardata diagnosi e/o insoddisfacente terapia del tromboembolismo venoso.

Introduction

Evolutions of technology and progress in scientific knowledge have led an increasing waiting for "result" of the health practice. Sometimes inadequate information about complications and highlighting of the positive outcomes resulted in a lower acceptance of an unfavourable consequence of each diagnostic and therapeutic performance. The current socio-cultural attitude tends to give to the Medicine all-powerfulness in complete healing, tending to attribute any suspected failure to "medical malpractice" [1].

It should be remembered that the physician is subject to a professional contract towards the patient: in the Italian jurisprudential doctrine this contract is defined as "social contact". This definition allows to standardize the rules of medical behaviour and to delineate specific duties of protection to the patient (Civil Cassation, SS.UU., judgment 11.01.2008 n. 577). The so-called "contractualization" of medical liability outlines a professional relationship in which the patient is a creditor of the medical practice while the physician is required to offer its practice according to the parameters of diligence, prudence and "peritia": in this socio-cultural context, the common relationship between the patient and the physician has profoundly changed, consolidating an increased reading of medical liability in face of a strengthening of the concept of patient's health protection.

In order to defend themselves from possible litigation, physicians apply or avoid specific judgment, inspired more for the purpose to remove or minimize the risk of medico-legal consequences that to ensure the patient's health (so-called "defensive medicine"). It is also possible an uncritical agreement to the recommendations contained in the "guidelines", refraining from those clinical measures not provided by guidelines but necessary for the patient's health [2].

After the Italian Decree 158/2012 (so-called "Balduzzi's Decree"), only a proper application of statements reported in guidelines could be considered a positive factor in the medico-legal assessment of clinical practice. Conversely, an unjustified and erroneous application of guidelines may represent a wrongful conduct not sufficiently expert, prudent and diligent, rather than a judgement of "excuse" of medical error.

With specific reference to thromboembolic disease, the International scientific community has tried to outline statements universally shared in order to standardize and improve patient management and to optimize the available funds in prevention and diagnostic-therapeutic management, despite the clinical heterogeneity, the difficulty of treatment and the costs related to the consequent morbidity and mortality of this disease.

Despite the periodically publication of many “evidenced-based” statements in order to assist clinicians, several studies report a level of guidelines adherence surprisingly low [3,4]. At the same time, more frequently hypotheses of medical liability for incongruous prophylaxis, failure or delay in diagnosis and/or unsatisfactory treatment of venous thromboembolism are feared.

Guidelines and good medical practice: medico-legal aspects

The Italian Decree Law 158/12, converted into Law 189/12 (“Balduzzi’s Decree”), establishes that *“The operator of the health care profession that in carrying out its activities adheres to guidelines and good practices, recognized by the scientific community, is not liable for slight negligence...”*

In this law there is explicit reference to guidelines, as systematically developed statements produced through a methodical process in order to assist practitioners and patients decisions about appropriate health care for specific clinical circumstances, according to the classic definition developed in 1992 [5]. The process of guideline development should be multidisciplinary with a panel consisting of representatives of all relevant groups should be convened: this procedure is increasingly based on a thorough evaluation of the best available evidence, including, when appropriate, meta-analysis of published research studies on the outcomes of various treatment options, rather than the consensus of expert panels. The statements are intended to be *“a distillation of current evidence and opinion on best practice”* [6,7].

Clinical practice guidelines are one component of good medical decision-making, which takes into account patient’s preferences and values, clinician’s values and experience and the available resources. For these reasons, guidelines cannot take prescriptive value, but rather suggestive of an appropriate practice, while maintaining to the physicians any independent decision, when compared these statements with the detailed properties of each case.

The jurisprudential Italian expressions were aligned to this doctrinal interpretation; the Courts pointed out that: *“...the doctor is always required to exercise their practices considering the particular circumstances of the real case and the condition of the patient, respecting patient’s preferences, overcoming statements crystallized in medical protocols...”* (Cass. Pen. Sec. IV n. 19354, March 2007).

It is also emblematic as underlined in the following sentence: *“The simple execution of the statements contained in the guidelines does not exclude the liability of negligent practitioner, because it is up to the physician treating the patient with the diagnostic and therapeutic tools approved by medical science, without being influenced by the needs of different nature or provisions, considerations, evaluations, that are not relevant to the tasks assigned by law... The physician is not required to comply with those directives in conflict with patient’s care... degrading their professionalism and mission-level accountability...”* (Cass. Pen. Sec. IV n. 8254, November 23).

Despite it is certainly possible that guidelines could be produced as evidence of what constitutes reasonable conduct by a medical practitioner for the purposes of assessing whether the practitioner’s duty of care had been breached in a medical negligence action, they are not a

definitive statement of the correct procedure. Guidelines constitute a general guide to be followed, subject to the medical practitioner’s judgement.

While it may be possible to develop explicit criteria for diagnosis and treatment of certain pathologies, the current state of medical knowledge is insufficient to support the development of explicit and correct statement for all clinical situations. Furthermore, the intricate process of clinical guidelines development, to which are not extraneous organizational and economic assessments, limit the role that guidelines play in the litigation process [8].

The Italian Courts recently pointed out that the compliance with guidelines should not be the only parameter for evaluating medical practice. The properties of the single clinical case could justify diagnostic or therapeutic decisions that depart from guidelines. This approach is in line with the medico-legal Italian literature: *“Medical guidelines are characterized by the universal meaning of the statements provided, applicable to all cases with similar characteristics to the theoretical model... There are critical profiles about the relevance of such statements and their degree of prescriptively, in relation to the individual nature – as addressed to the single clinical case – which is proper of medical activities”* [9].

Despite these notes and the risk more often reported as a misinterpretation of the guidelines meaning, Courts increasingly admitted guidelines as evidence of the legal standard of care to proof of rebuttal of medical malpractice with the help of expert witness testimony.

In such a complex operating system the physicians are bound on the one hand to the respect of the diagnostic-therapeutic statements, although not prescriptive, and on the other hand to the principles of medical ethics which, as noted, support medical judgement autonomy in the protection of patient health (art. 3 and 4 of the Italian Code of Medical Ethics). Italian Code of Medical Ethics, recently revised, pointed out that the physician must support their technical and professional experience through the effectiveness and appropriateness values, updating scientific knowledge available, through a continuous monitoring and review of literature.

It must finally be emphasized that a misinterpretation of the rule introduced by Decree 158/2012, resulting slavish observance of the guidelines, in the expectation of an exclusion of medical liability, seems to further encourage conducts of *“defensive medicine”*, whose elimination was one of the main goals of the Italian legislature at the time of enactment.

Medical liability in prevention, diagnosis and treatment of venous thromboembolism

The scientific literature has largely focused on the need of thromboembolic prophylaxis, providing efficacy evidence, when performed in the manner and appropriate times [10,11].

The careful evaluation and identification of thromboembolic risk is essential to set the appropriate preventive strategy and reducing the mortality and morbidity associated with this disability. Assessing patients for risk is the basis of most of the clinical trials on prevention of venous thromboembolism (VTE): the clinical data that have resulted in hospitalization and treatment represent undoubtedly the major risk factors, as well as also outlined in the guidelines of the American College of Chest Physicians (ACCP), recently subjected to further review and publication [12].

In order to estimate the individual risk of each patient, several VTE risk assessment models based on both individual predisposing factors and on acquired clinical conditions have been developed and clinically evaluated [13-16].

The incidence of venous thromboembolism increase dramatically in tandem with the number of risk factors identified in patients (such as age, family history, acute medical illness, thrombophilic diathesis, protracted immobilization, pregnancy, cancer, major or minor surgeries, etc.).

The thromboembolic risk factor score, calculated for any patient, provides helpful starting information to determine the type and length of pharmacological and/or mechanical prophylaxis to administer [17]. The potential for legal liability with antithrombotic therapy begins when the patient is first considered or should have been considered for antithrombotic prophylaxis.

For these reasons, in this decisive preventive step, it is recommended to consider all VTE risk factors in order to adequately assess not only the thrombo-embolic risk, but also the haemorrhagic risk.

Although there are many evidence-based guidelines which show indications for VTE prevention, many studies have revealed high rate of malpractice in using prophylaxis. In medico-legal evaluation attention is often focused almost exclusively on the use or not to pharmacological prophylaxis: the administration of anticoagulant therapy is often considered sufficient reason to exclude a possible medical negligence. In order to prove that a medical practitioner has fulfilled a duty of care to the patient, it is necessary to evaluate any necessary combination with mechanical prophylaxis, the anticoagulant class used, the dose, the duration of treatment and monitoring of it, the chronology of the prophylaxis beginning. Appropriate prophylaxis is achieved only by providing the patient with the appropriate drug (or device) at the appropriate dose and for the appropriate duration [18].

Despite there is unanimous and authoritative consensus on prescribing or not prescribing thromboembolic preventive measures, some issues are still debated and different advices are provided by the several guidelines developed on this item, for example on the duration and the correct time to start prophylaxis, as well as on the proper selection and administration of anticoagulant drugs available. Critical issue is, in particular, the administration of chemical prophylaxis, both for the need to use the correct dose for the particular clinical case, both for the importance of an adequate monitoring, and both for the compliance, not always adequate, for the patient during the maintenance of care outside the hospital. For these technical hitches, the use of standardized practices is basic in order to avoid or at least reduce the risk of malpractice.

In the diagnostic phase, the often aspecificity and heterogeneity of the clinical cases makes it difficult for a timely and correct diagnosis of thrombo-embolic disease. In the absence of clinical pathognomonic signs of a pulmonary embolism, the clinical diagnosis requires a high index of suspicion and the start of the appropriate diagnostic instrumental methods in order to allow a more accurate diagnostic definition.

As demonstrated in several autopsy-based studies, approximately two thirds of cases suffering from pulmonary embolism are not adequately identified *ante mortem*. In the 50s, forensic studies had shown that in only 11-12% of patients the diagnosis was correctly suspected [19]. With the introduction of more appropriate diagnostic methods, there has been an improvement of diagnostic accuracy: in a study conducted between 1973 and 1977, Goldhaber *et al.* reported correct *ante mortem* diagnosis in 30% of cases (confidence interval [CI] 95%, 18-44%) [20]. In line with these data, another study carried out between 1980 and 1984 reported a percentage of correct diagnosis in 32% of cases (95% CI, 19-48%) [21]. In 1990, Daisley showed that pulmonary embolism was the major contributing factor to the cause of death in 10% of the 610 autopsies performed in a general hospital population; of the patients dying from major pulmonary embolism, in only 19.7% the diagnosis was suspected *antemortem* [22].

Despite the significant improvement in diagnosis and management of pulmonary embolism, the difficulty of making a correct and timely diagnosis still persists; at the same time, this disease represent an important cause of morbidity and mortality among hospitalized patients in absence of an adequate and timely treatment.

It must also be highlighted that the diagnostic evidence of pulmonary embolism occurs in only 20-30% of suspected cases. For these reasons, the literature on the subject shows a constant interest in *antemortem* accuracy diagnosis in order to allow an appropriate therapeutic approach resulting in reduction of mortality from one side and on the other in optimizing funds by reducing unnecessary and often invasive examinations.

For this purpose in recent years clinical assessment of pretest probability become a crucial tool in the diagnostic approach of patients with suspected pulmonary embolism [23]. Despite clinical judgement and technical findings have poor diagnostic value per se in terms of predictive accuracy, the combination of several items is crucial in the formulation of the suspected diagnosis. Categorization of patients into pretest probability groups guides the diagnostic strategy by selecting patients in whom further tests should be performed.

The most extensively validated predictive model is the original Wells score, that categorizes patients into low, moderate and high probability groups, or the simplified version (the Modified Wells Scoring System) that identifies two categories of probability (EP likely or unlikely). These models are not fully standardized and are criticized due to the presence of a subjective criterion (the physicians' judgement of whether an alternative diagnosis is less likely than pulmonary embolism) that limits score reproducibility. To overcome this limitation of the Wells model it was introduced the Geneva Score exclusively based on objective clinical items [24-26].

During the diagnostic step errors are frequently due to a lack or to an incongruous acquisition or to a misinterpretation of all clinical and instrumental available data. Malpractice litigations may also focus on the inaccurate time management of the investigations, on the inability to put differential diagnostic hypotheses, resulting in failure or untimely implementation of treatment protocols for thromboembolic disease.

Not only the inability to put differential diagnosis, but also the unjustified and without a correct purpose use of unnecessary, ineffective or harmful instrumental tests may represent a wrong medical conduct. The inaccurate evaluation of the relationship between the diagnostic efficacy of an investigation and its such clinical risk may lead to medical liability; from a legal perspective, the standard of care descended from one side from the acquirement of patient consent and from the other by the existence of a "necessity state" that justify medical action because it is aimed at avoiding risk of greater harm than itself induces.

In the hypothesis of pulmonary embolism, physicians are often concerned that the introduction of clinical practice guidelines with the consequent increased use of instrumental tests, although more invasive (such as the computed tomography angiography) will reduce their clinical decision-making authority avoiding malpractice litigation.

In light of current diagnostic algorithms [23], we must emphasize the role too often overlooked of the combined assessment of clinical probability with D-dimer test findings; in patients categorized into low or moderate clinical probability group the D-dimer test might be useful as the first step of an instrumental evaluation because pulmonary embolism can be excluded without any further invasive testing in a larger proportion of patients (30% of in hospital cases), resulting in reduced risk associated to use of X-ray contrast media and ionizing radiation.

It is noted that the occurrence of an adverse event during an unnecessary diagnostic investigation does not relieve the practitioner from medical liability; in lack of adequate assessment of benefits and costs, the use of the most sophisticated and extensive diagnostic tests should configure a conduct of “defensive medicine” that does not improve the quality of care.

In the diagnostic step, it is acknowledged the possible lack of adequate instrumental equipment which can result in delays or errors. In this case, there is a physician's duty to exhaustively inform a patient about the possibility to carry out the necessary diagnostic investigation in a better equipped hospital. Concerning this hypothesis, in relation to the death of a young man suffering from the fracture of left femur with a sciatic nerve injury, resulting in pulmonary embolism, the Court held that “*the grounds of the contested judgment appears to be adequate in considering negligent and unskilled the practitioners in the preventive treatment of thromboembolism, despite the necessary treatments and investigations were not being present... the practitioners had a duty to take action for the implementation of all the appropriate therapeutic measures, requesting the transfer of the patient...*” (Cass. Pen., Sec. IV, December 19, 2000).

Therefore in prevention and diagnosis of thrombo-embolic disease it is recommended the physicians' knowledge of the correct and appropriate procedure pointed out in guidelines but all statements must be subject to the medical practitioner's expert judgement in each case.

Even before the Balduzzi's Decree, the Supreme Court made express reference to guidelines; in a recent decision it was held that “*guidelines provide that the anticoagulant treatment should be used in the hypothesis of venous thrombosis and in the absence of contraindications... the conduct of the physician is therefore negligent for not having properly collected the anamnesis asking the patient who complained of chest pain if also he has ever suffering from dyspnoea and/or sweating associated to dyspnoea such as with still sickness or even prelipotimia, and for not having detected vital signs and not having examined the lower limbs of the patient especially in the light of the reported trauma*” (Cass., 12 July 2011, n. 34729).

Even the Supreme Civil Court considered that “*in differential diagnosis, discontinuation of therapy for one of the possible diseases hypothesized could be justified only by achieved certainty that one of these diseases could be excluded; or, in the case where the therapeutic treatments were incompatible (in the present case could be foreseen the case of a disease that would entail the risk of bleeding), could be suspended one referring to the disease which, according to the appreciation of all the elements known or knowable conducted according to the rules of the medical art, could be considered less likely. And always, in the comparative assessment of the relationship between costs and benefits, the disease less likely had not characteristics more severe and could therefore be reasonably taken the decision to take the risk of not to cure one, if exist, could, however, cause minor damage compared to the not treatment of the one most serious*” (Cass. Civ., Sec. 3, 29 November 2012, n. 21233).

Still it is necessary to highlight a more recent judgment of the Criminal Appeal that pointed out that “*the practitioner who for imprudence, incompetence or negligence does not perform investigations on all medical protocols prescribed, before and after surgery, is legally vulnerable... assuming as occurred the conduct necessary but omitted and after excluding the interference of alternative causes, if it is proved through a counterfactual judgment that the harmful event would have been avoided or it would be occurred in times significantly back or with less intensity damaging with a high degree, close to certainty, of rational credibility*”.

However, the application in the legal systems of guidelines as a tool for assessing the medical conduct is much controversial and discuss.

Although it was emphasized the importance of their relevance in a retrospective medico-legal evaluation of the sequence of clinical events which led to a hypothesis of professional negligence “*in order to give high degree of rational credibility to the hypothesis of causal reconstruction*” [27], an uncritical application of guidelines is not without risks of imprudent and false interpretation.

Because they are more or less concise statements of what the profession deems to be appropriate care and not prescriptive and definitive rules of the correct procedures, they constitute a general guide to be followed. An adequate and justify derogation from guidelines cannot be mechanically set up as hypothesis of guilt; the medical practitioner's judgment in each case must represent a factor not evocative of a wrongful conduct but indicative of a good clinical practice.

At the same time, the physician who did not recognize in each case the need to deviate from guidelines could be challenged to a medical negligence action, as the clinical practice sometimes require to overcome the information contained in the general guide.

On this point, the decision of the Supreme Criminal Court appears emblematic: “*...regarding guidelines, there is the fear that the same may provide undue protective hats to sloppy and careless conducts: a procedure is not permissible because it is allowed, but it is allowed why it is diligent*”.

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