

Thromboprophylaxis in patients receiving inpatient palliative care: a survey of present practice in Austria

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Abstract

Background There is limited data on the use of thromboprophylaxis in patients with advanced cancer. We therefore aimed to study the practice of thromboprophylaxis in palliative care units in Austria.

Methods We monitored use, indication, and contraindications to thromboprophylaxis in 134 patients hospitalized in 21 palliative care units in a prospective, cross-sectional study.

Results Forty-seven percent of patients were on low molecular weight heparin on the day of the study for primary or secondary thromboembolism. Thromboprophylaxis had been withdrawn in 18% of the patients upon admission to the palliative care unit. Contraindications for thromboprophylaxis were present in 27% of all patients. Cancer was present in 86% of the patients. The use of thromboprophylaxis was similar in cancer patients and in non-cancer patients (49% vs. 42%). Contraindications for thromboprophylaxis were present

in 24% of all cancer patients. Significantly more bedridden cancer patients had contraindications for prophylaxis when compared with mobile cancer patients (35% vs. 16%; $p=0.03$). Low performance status was by far the most frequent contraindication among these patients (89%). Seventy-one percent of all bedridden cancer patients were treated in accordance with common guidelines for thromboprophylaxis when contraindications were taken into account. Eighty-seven percent of patients who had been involved in decision making opted for getting prophylaxis.

Conclusions Our data reveal that about half of all cancer patients in palliative care units are treated with thromboprophylaxis. Low performance status was the most frequent contraindication for thromboprophylaxis.

Keywords Palliative care · Thromboprophylaxis · Venous thromboembolism

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Introduction

Venous thromboembolism (VTE) is a common complication in severely ill patients and an important cause of morbidity and mortality [1]. Prevalence of VTE in cancer patients is particularly high and varies according to literature from 10% to 50% [2]. One in every seven hospitalized cancer patients dies of pulmonary embolism [3]. This fact and the awareness of other additional risk factors for VTE [4] prompted the use of thromboprophylaxis (TP) in these patients [5] and subsequently development of guidelines for the use of TP by national and international societies [6–8]. These guidelines result in a grade IA recommendation for TP in immobile cancer patients. In a recent multinational cross-sectional study including 358 hospitals in 32 countries only 39.5% of medical patients at risk received ACCP-recommended VTE prophylaxis [9].

The majority of patients in palliative care (PC) suffer from advanced stages of cancer, are therefore at substantial risk for VTE, and would require prophylaxis according to these guidelines. However, decision on TP in patients with advanced cancer is particularly difficult and recommendations extrapolated from the general hospitalized cancer population supporting routine thromboprophylaxis have been challenged [10, 11]. TP will on the one hand reduce the symptom burden in some patients by prevention of non fatal emboli and thus meets the goals of palliative care. On the other hand, it may prolong life in a few patients by reducing acute fatal events of pulmonary embolism, which may not be intended by some of them in the situation of end-of-life care.

Available data show that the majority of PC patients who are involved in decision making opt for getting TP [12]. Opinions on usefulness of TP in PC patients have been collected also from health care professionals. These data show that physicians increasingly use TP [13]. We previously found that willingness of physicians to deliver TP to PC patients is inversely correlated to patient's performance status: while physicians would give TP according to established guidelines for cancer patients as long as the Karnofsky index (KI) is 40 or higher, they would completely withhold prophylaxis once patients have reached a KI of 10 [14].

There is limited data on the use, indications, and contraindications of TP in the palliative care population [15, 16].

We therefore undertook a survey to explore the practice of TP in such units and to compare its actual use with current recommendations.

Patients and methods

Patients

Included into the study were all inpatients in all PC units in Austria on the day the study was carried out. There were no exclusion criteria.

Methods

The study was carried out as a prospective, cross-sectional analysis on the use of TP of all patients hospitalized at PC units in Austria. Data were asked from all palliative care units in Austria twice, the second 3 months after the first, in 2010

The study was carried out in keeping with local legal requirements and was approved by the Ethics Committee of the Medical University of Vienna, Austria.

Study material containing a custom-made questionnaire including questions about diagnosis, demographic data, presence/absence of TP, performance status, and state of consciousness was sent in advance to 21 PC inpatient units in Austria.

Questionnaires had to be filled out by one investigator in each unit for every patient hospitalized upon notice from the study center in the morning of the study day.

Indications for TP were judged according to the guidelines issued by the American Society of Clinical Oncology for TP in cancer patients [7]. Hospitalization due to sequels of advanced cancer together with immobility were used as indications for TP. Immobility was defined as a Karnofsky index ≤ 40 which describes a situation in which patients are disabled and require special care and help ("bedridden").

A platelet count of $<50,000/\mu\text{L}$, a prothrombin time of $<40\%$ of normal, overt bleeding, a serum creatinine of $>1.5\text{ mg/dL}$, and a KI of $\leq 20\%$ were all regarded as contraindications for TP in this study. A KI of 20 describes a patient who is very ill and requires urgent admission and supportive measures or treatment.

Statistical analysis

Data were analyzed with the SPSS statistical package (Statistical Package for the Social Sciences, SPSS Inc, Chicago, IL, USA). Metrical data like age were expressed in means \pm SD when normal distributed, or in median (range) when skewed. Nominal data are presented by using percentages. Due to the lack of homogeneous variances and/or skewed data, *U* tests were used. Chi-squared tests were calculated for nominal data. A *p* value <0.05 was considered to indicate a significant result.

Results

Eighty-six percent (18/21) of all units responded to the questionnaire. They included all their inpatients on that day ($n=134$) into the study. Patient characteristics and clinical

Table 1 Characteristics of study patients ($n=134$)

Sex (female)	69 (51%)
Age (years, mean \pm SD)	70 \pm 15
Body mass index (kg/m^2)	22 \pm 4 kg/m^2
Orientated in time and place	103 (77%)
Cancer diagnosis	115 (86%)
Platelet count (g/l) (median, minimum–maximum)	263 (46–827)
Prothrombin time (% of normal) (median, minimum–maximum)	80 (19–137)
Serum creatinine level (mg/dl) (median, minimum–maximum)	0.9 (0.3–3.7)
Level of consciousness (normal/somnolent/comatose)%	77/18/5
Karnofsky index (%) (median, minimum–maximum)	40 (10–90)
KI $<30\%$ [n (%)]	22 (17%)
KI 30–60%	88 (69%)
KI $>60\%$	17 (14%)

Table 2 Use of thromboprophylaxis (TP) in different groups of patients

	With TP	Without TP
All patients (<i>n</i> =134)	48%, 64/134	52%, 70/134
Non-cancer patients (<i>n</i> =19)	42%, 8/19	58%, 11/19
Cancer patients (<i>n</i> =115)	49%, 56/115	51%, 59/115
Mobile cancer patients (<i>n</i> =63)	51%, 32/63	49%, 31/63
Bedridden cancer patients (<i>n</i> =52)	46%, 24/52	54%, 28/52

parameters relevant for TP are shown in Table 1. Fifty-one percent (69/134) of patients were female. The mean patient age was 70±15 years. Cancer was present in 86% (115/134) of the patients. The mean BMI was 22±4 kg/m², median KI was 40% (10–90%).

Forty-seven percent (63/134) of patients were on low molecular weight heparin on the day of the study for primary or secondary TP. TP had been withdrawn in 18% (24/134) of the patients upon admission to the PC unit.

The use of TP was similar in cancer patients and non-cancer patients (49% vs. 42%) and in mobile (KI>40) and bedridden (KI≤40) cancer patients (51% vs. 46%) (Table 2)

Contraindications for TP were present in 27% (36/134) of all patients, in 24% (28/115) of all cancer patients, and in 35% (18/52) of bedridden cancer patients. Significantly more bedridden cancer patients had contraindication for TP when compared with mobile cancer patients (35% vs. 16%; *p*=0.03) (Table 2).

Patients with contraindications were generally more prevalent in groups without TP when compared to groups with TP. This was the case for the total group of patients (34% vs.19%; *p*<0.05), for the subgroup of patients with cancer (18% vs. 30%; *p*=0.1), for bedridden cancer patients (46% vs.20%; *p*=0.05), and for patients without cancer (55% vs.25%; *p*=0.5).

Fifty-four percent (28/52) of bedridden cancer patients did not receive prophylaxis. Contraindications for TP were present in 46% (13/28) of them. The remaining 54% (15/28) of them—or 29% (15/52) of all bedridden cancer patients—did not receive prophylaxis. Information upon involvement in decision making was available for 48 patients. Thirty-three out of 38 (87%) who had been involved opted for getting prophylaxis.

Table 3 Prevalence of contraindications (CI) in different groups of patients

KI Karnofsky index, *Others* platelet count <50,000/μL, prothombin time <40% of normal, serum creatinine >1.5 mg/dL, KI ≤20, active bleeding

	With CI	CI: KI≤20	CI: Other
All patients (<i>n</i> =134)	27%, 36/134	58%, 21/36	42%, 15/36
Non-cancer patients (<i>n</i> =19)	42%, 8/19	62%, 5/8	38%, 3/8
Cancer patients (<i>n</i> =115)	24%, 28/115	57%, 16/28	43%, 12/28
Mobile cancer patients (<i>n</i> =63)	16%, 10/63	0%, 0/10	100%, 10/10
Bedridden cancer patients (<i>n</i> =52)	35%, 18/52	89%, 16/18	11%, 2/18

Discussion

The primary goal of our study was to explore the current practice of thromboprophylaxis in palliative care units in Austria. Our data show that 47% of all patients hospitalized in PC units are receiving medical prophylaxis to prevent thromboembolic events. These data obtained by cross-sectional analysis are robust as 18 out of 21 PC units invited actually contributed to the data set and included all their patients. This is to our knowledge the only prospective and largest multicenter survey in this population.

The vast majority of our patients (86%) was suffering from advanced metastatic cancer and was therefore at high risk for developing TP. International guidelines on TP give an unequivocal, highest grade recommendation for the use of medical prophylaxis for this group of patients [7, 8]. When we created that subgroup of bedridden cancer patients in our population of PC patients we learned that 46% of them were on TP.

One explanation for the discrepancy between recommendations for prophylaxis in guidelines and their clinical application in cancer patients in general and in those at PC units in particular is a high prevalence of contraindications for TP in these patients (Table 3). Contraindications to TP were present in 14% of all patients in a large study on the use of TP in medical patients, which included mainly non-cancer patients [9]. No data are available from this study on the prevalence of contraindications for the subgroup of cancer patients.

We used common criteria for definition of contraindications for TP [17] in our study and added a KI≤20 to them. This KI range covers the performance status of a patient from a pre-final status (KI 20) to death (KI 0) and was regarded as a contraindication to TP in cancer patients by a group of palliative care experts in a previous study [14]. Based on this definition, we could identify contraindications in 35% of bedridden cancer patients. A similar rate has recently been reported in palliative care patients by Gillon and coworkers [16].

They identified contraindications in 40% of palliative care patients using an almost identical definition.

TP had been withdrawn by the PC team upon admission due to the presence of contraindications in 18% (24/134) of

all patients. Nevertheless, there were still 19% in the total group of patients, 18% in the subgroup of cancer patients, and 20% in the subgroup of bedridden cancer patients who were on TP despite the presence of contraindications. A $KI \leq 20$ was by far the most prevalent contraindication accounting for as much as 16 out of 18 contraindications in bedridden cancer patients. This contraindication has never been formally established in the palliative care community and therefore has obviously not been obeyed by the palliative care physicians in our study.

The fraction of patients who were treated according to common guidelines developed for cancer patients increases from 46% to 71% when we take all contraindications into account.

Another explanation for the impression of under use of TP in our study might be that contraindications in reality have been more prevalent than could be identified by our study protocol. Complex clinical situations might arise in palliative care aside from our list of contraindications which could be judged as contraindication for TP by palliative care physicians. There is a variety of personal reservations of physicians about TP which have been elegantly identified by Noble et al. While physicians in their study were progressive in their attitudes to palliative care and comfortable with instigating active interventions for patient benefit, many of them had not observed any VTE themselves and therefore considered it not important enough to warrant guidelines. They were also concerned that those guidelines in the general population were not transferable to the advanced cancer population and that outcome measures of such studies would be less meaningful to a palliative care population. In addition, they considered TP a life-prolonging intervention which may result in a poorer death than one because of VTE [18]. It is easily possible that such reservations were present in physicians taking care of our study patients and contributed to withholding prophylaxis.

In applying guidelines for TP in cancer patients to a subgroup of them being hospitalized in palliative care units, we are aware that such an extrapolation can be challenged. Cancer patients hospitalized in palliative care units for end-of-life care are different in many aspects from cancer patients in oncology clinics [10]. Given the disease trajectory of patients in palliative care, it will be extremely difficult and—if feasible at all—it will take time to perform meaningful studies to generate valid guidelines for TP for this group of patients. For the time being, shared decision making based on careful extrapolation from other guidelines will remain the mainstay of TP. A “failure rate” of 29% to comply with an international guideline developed for cancer patients in general—as found in this study—may just reflect that fact. Following recommendations from national health authorities may result in dramatically lower numbers of patients receiving TP, as has been shown in a

recent study in hospice patients [16]. Guidelines specifically developed for this population of patients asked for thromboprophylaxis in situations with temporary increased risk for venous thromboembolism. Such situations comprised acute medical illness, recent surgery, spinal cord compression undergoing treatment, or reduced mobility with expectation of recovery.

These situations could be identified in 8.6% of patients and TP was ultimately given to roughly half of them (3.7% of all patients).

The situation is quite different when we focus on early palliative care. Adherence to general guidelines for cancer patients is certainly an appropriate measure of quality of palliative care for this group of palliative care patients.

The primary goal of palliative care wards in Austria is to improve the clinical status of patients and to organize their social environment in a way which allows them to be dismissed home. The annual national audit of palliative care units in Austria revealed on the year the study took place that 59% of all patients admitted were actually dismissed home (Pelttari-Stachl L, Datenerhebung Hospiz Österreich, 2010, personal communication). This mixture in our study of patients getting palliative care rather early in their disease trajectory with patients getting end-of-life care may be an important aspect in interpreting our data. In summary, our data reveal that 71% of cancer patients in palliative care units get TP in accordance with the guidelines developed for hospitalized medical patients with cancer. This rate is superior to those obtained in cancer patients and must be interpreted in light of specific features of our study population and of the characteristics of palliative care patients in general.

Conflict of interest None.

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