Factors Influencing Delayed Diagnosis in Oncology

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ABSTRACT

Background: In Romania there is a discrepancy between cancer incidence (last place in Europe) and mortality rate (over the medium rate in Europe), possibly due to a higher number of late diagnosis. This study aims to determine associations between delayed cancer diagnosis and psychosocial characteristics (depression, coping style, social support).

Methods: Cancer patients were administered a battery of tests for depression, anxiety, coping mechanism, social support, social status, medical and family history, and time between first symptoms and diagnosis.

Results: Delayed presentation was positively correlated with female gender (p=0.031), rural area (p=0.033) and law stress levels (p=0.045), depression (p=0.02). positive reassessment (p=0.002) and low positive refocusing (p=0.006).

Conclusions: Coping styles, depression and gender influence delayed diagnosis of cancer, this potentially contributing to a bad prognosis of oncology patients. Further longitudinal studies and screening procedures could contribute to a better understanding of individual contribution of these factors to delayed diagnosis.

Keywords: cancer, delayed presentation, depression, anxiety, coping mechanism.

BACKGROUND

In the last decades there has been a continuous rise in oncologic disease incidence and mortality, with an estimated incidence of 18.08 million worldwide and 4.2 million in Europe, and a mortality 9.5 million worldwide and 1.9 million in Europe in 2018 (1-3). In Romania, cancer was estimated to have an incidence of 83 000 cases (the last place in Europe, 24.7% lower than the medium incidence rates) and a mortality of 50 900 cases (1) (the 15th place in the mortality ranking, with 1.12% over the medium mortality rates) (4). The most frequent type of cancer was represented by lung cancer, with 13.6% of all cases, followed by colorectal, breast and prostate cancer (1).

This significant difference between reported cancer incidence and mortality rates could be explained by a number of factors concerning the primary medical system (deficiency of screening and prevention programs), secondary medical system (limited access to modern diagnostic tools, long waiting time for specialized examination), patient characteristics (fear of diagnosis, low ability to recognise signs and symptoms, failure to recognise the risk of disease, lack of time for medical consultation, low capacity of communicating with the medical personnel) (5-10).

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The present study aims to find associations between delayed cancer diagnosis and a series of patients' psychological (depression, coping style, social support), social (marital status, children, education) and medical characteristics (personal and family history). ❑

METHOD

Between September 2018 and May 2019, a battery of tests was administered to 500 oncology patients from several hospitals in Bucharest, Romania. The battery included marital status, medical and family history, therapy, initial and current symptoms, time between first symptoms and medical consultation. For psychological characteristics, Rosenberg's Self-Esteem Scale, DUKE Social Support questionnaire, DASS 21-R, Strategic Approach Scale for Coping, Cognitive-Emotional Coping questionnaire were used.

Rosenberg's Self-Esteem Scale is a 10 item-questionnaire regarding positive and negative feelings about self, with a higher score being associated with a higher self-esteem (11).

DUKE Social Support questionnaire is a 10 item-questionnaire regarding help and empathy from other people, a higher score being associated with higher perceived social support (12).

DASS 21-R (for psychiatric comorbidity) is a 21 item-questionnaire that evaluates levels of depression, anxiety and stress (seven items each). It is a short version of DASS, which has 42 items (13).

Cognitive-Emotional Coping questionnaire (CERQ) has 36 items and includes nine types of coping used in negative settings: self-blame, acceptance, rumination, positive refocusing, refocusing on planning, putting into perspective, catastrophizing, blaming others (14).

Strategic Approach Scale for Coping (SACS) is a 52-item questionnaire that includes nine types of coping strategies in a certain social context: assertive action, social relations, seeking social support, prudent action, instinctive action, avoidance, indirect action, antisocial action, aggressive action. This questionnaire was administered only to patients aged under 41, because it was not standardized for older persons (15).

Inclusion criteria: age over 18, pathologic diagnose of cancer, at least one type of cancer treatment (surgery, chemotherapy, radiotherapy, immunotherapy, hormonal) received by individual patients.

Exclusion criteria: patients with tumors who had not been biopsied yet, spatial temporal disorientation, decompensated psychiatric comorbidity, ECOG 3-4, highly symptomatic patients. ❑

RESULTS

Out of 500 questionnaires that have been equally distributed to male/female subjects, 202 were returned (69.8% females), the response rate being 40.4% (56.4% for women, 24.4% for men). Age distribution was 20 to 96 years old, with an average of 55.15 and a median of 55.5, standard deviation (SD) 13.328. Division into age groups was unequal: 27.7% in the 51-60 years old group, followed by 25.2% in the 61-70 years old group, 20.3% in the 41-50 years old group, and under 12% in the remaining age groups. Most patients lived in urban areas (75.71%), were married (78.71%) and had either one child (41.1%) or at least two children (40.1%).

The distribution regarding primary tumor was also unequal: 37.62% had breast cancer, 17.33% colorectal and less than 10% urological, gynecological, endocrine and others.

Time from first signs and symptoms to medical consultation was reported between one week and 96 months, median 8.37 months, SD 14.325, with an extreme left deviation of the distribution curve, reason for which we used age group intervals for statistical analyses. Most patients came to medical consultations in less than a month (27.2%), followed by 1-3 months (24.8%), 6-12 months (18.8%), 3-6 months (16.3%) and over one year 12.8% (Figure 1, Table 1). Regarding the stage at diagnosis, 45% were stage 2, 25.2% stage 3, 21.8% stage 4, and only 7.9% stage 1.

TABLE 1. Time to first medical consultation

	Frequency	Percent	Valid percent	Cumulative percent
Valid < 1 month	55	27.2	27.2	27.2
1-3 months	50	24.8	24.8	52.0
3-6 months	33	16.3	16.3	68.3
6-12 months	38	18.8	18.8	87.1
1-2 years	12	5.9	5.9	93.1
>2 years	14	6.9	6.9	100.0
Total	202	100.0	100.0	

The psychological tests results showed that 86.3% of patients reported medium self-esteem, 76.7% high level of perceived social support, 51.5% normal levels for depression and only 17.3% severe levels. Regarding anxiety, 42.6% reported severe levels and 19.8% severe stress perceived.

Early presentation was associated with male gender, 63% were consulted by a physician in the first three months vs 47.5% female (p=0.031, Cramer V=0.21). A similar difference was between patients from urban vs rural areas (60% vs 40%, p=0.033, Cramer V=0.201), and between patients with one or no child vs at least two children (50% vs 39%, p=0.05), with no statistical difference regarding children's age.
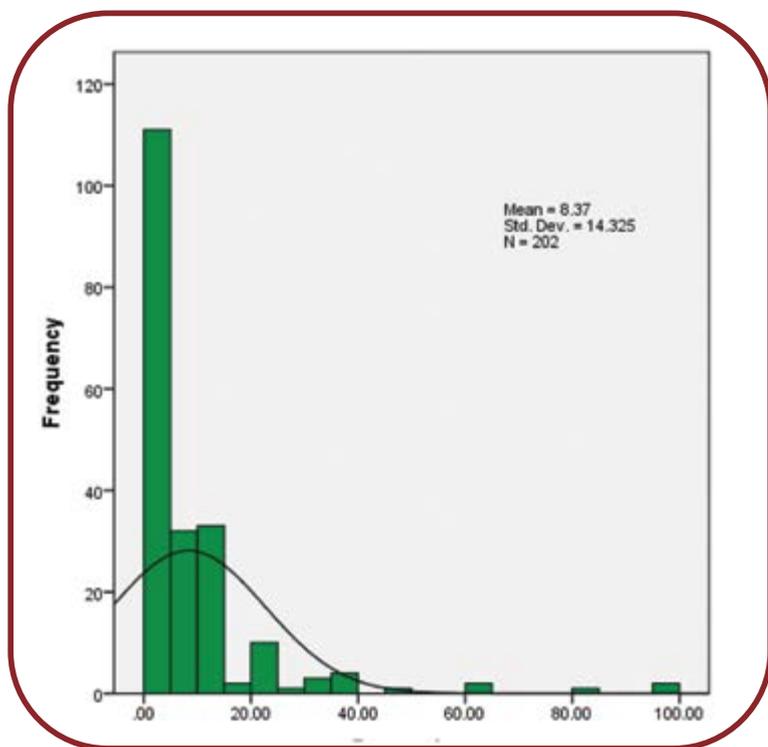

FIGURE 1. Time to first medical consultation

There is a statistically significant correlation between early medical consultation and loss of appetite compared to other symptoms (31.3% vs 19.7%, p=0.051, Cramer V=0.186). Presence of tumor nodules or asthenia determine a rise in time to medical consult (CI: 3.5-24.3, p=0.012; CI: 2.63-21.2, p=0.013).

In order to evaluate the correlation between psychological characteristics and time to medical consultation, we used multinominal regression for time category and considered three months as cut off point for early medical consult (Table 2). With this model, depression and stress show the highest coefficient, low stress levels being a negative predictive factor for the time to medical consultation (beta=-0.22, t=-2.019, p=0.045), low depression is a positive predictive factor (beta=0.18, t=2.2, p=0.02), also stress has a powerful positive correlation with depression (z=0,64). The rise of stress levels with one point determines a seven fold decrease of time to medical consultation (CI: -13.95-0.87, p=0.027).

Regarding the coping mechanisms, a long time to medical consultation is associated with a high level of self-blame (p=0.05) (Table 3). An elevated level of positive reassessment determines an 11 fold increase of time to medical consultation (CI: 4.39-18.37, p=0.002), while rising levels of positive refocusing and putting into perspective leads to an eight -fold and six -fold decrease, respectively, of time to medical consultation (CT: -13.39-3.37, p=0.003; CI: -10.43-1, p=0.006) (Table 4, Figure 2). ❑

DISCUSSIONS

The response rate in the female group was more than double compared to the male group. This difference is sustained by the literature, women tending to be more prone to answer question-

TABLE 2. Multinominal regression for time category

Independent variables	Coefficient	Std. error	$r_{partial}$	t	P
(Constant)	2.4834				
Self esteem	-0.009442	0.3017	-0.002264	-0.0313	0.9751
DUKE	-0.03606	0.1868	-0.01397	-0.193	0.8471
Anxiety	0.1174	0.1016	0.08334	1.156	0.2492
Stress	-0.2259	0.1119	-0.1445	-2.019	0.0549
Depression	0.2337	0.1187	0.1410	1.968	0.0505

TABLE 3. Association between self blame and time to medical consultation

	Coefficient	Std error	t	p	95% confidence interval lower	upper	Importance
intercept	16.37	3.708	4.41	0.000	9.06	23.68	
Self blame (very high)	4.33	2.019	2.14	0.033	1.35	8.32	0.616
Self blame (high)	15.07	4.49	3.35	0.001	6.22	23.93	0.559

TABLE 4. Association between positive reassessment, positive refocusing and putting into perspective and time to medical consultation

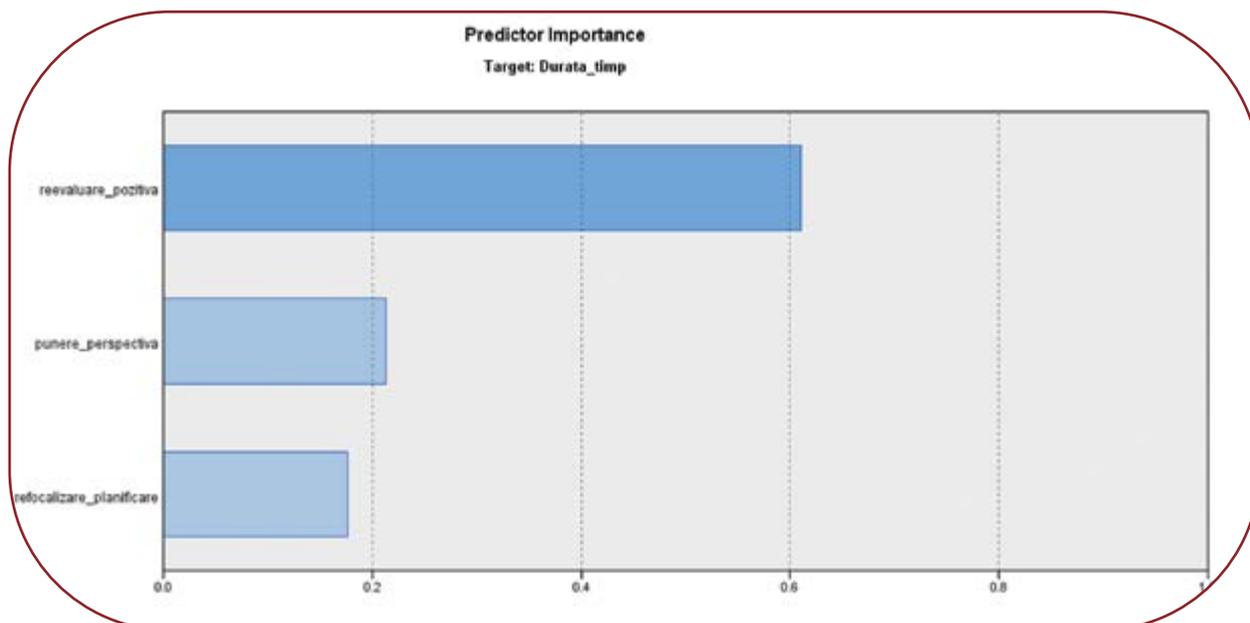|	Coefficient	Std error	t	p	95% confidence interval lower	upper	Importance
Intercept	4.77	2.06	2.31	0.028	0.56	08.99	
Positive reassessment (high)	11.38	3.42	3.33	0.002	4.39	18.37	0.616
Putting into perspective (very high, high)	-8.38	2.57	-3.25	0.003	-13.63	-3.13	0.213
Positive refocusing (very high, high)	-6.17	2.08	-2.96	0.006	-10.43	-1.92	0.176

FIGURE 1. Association between positive reassessment, positive refocusing and putting into perspective and time to medical consultation

naires in both traditional and web surveys (16, 17), which could be explained by a higher level of conformity than men (18).

The association between early medical consultation and male gender is different from the literature data. Most studies show that there is a gender difference regarding health care seeking behavior, women being more likely to visit a primary care physician (19, 20), but with no difference for secondary medical care and hospitalization (20). In the present study, male subjects tended to come to the medical consultation earlier, probably because they were influenced by their partner, which is in accordance with the literature, men being more likely to be influenced to seek health care by the opposite sex (21).

Regarding the association between depression, stress and different coping mechanisms, our findings are similar with those reported in the literature. High anxiety determines preventing health behavior and health care seeking (22). De-

pression and stress could increase symptom perception, induce negative coping styles (e. g., substance abuse) (22) and associate with an elevated risk of death in cancer patients (23). There are not many data in the literature regarding the association between coping styles and delayed diagnosis in cancer patients. Active coping, optimism and seeking support are associated with early diagnosis (24). ❑

CONCLUSIONS

This study shows that there are several characteristics that make patients more prone to prolong time to medical consultation for cancer signs and symptoms. For a better characterization of these patients, more studies should be performed in order to identify and diagnose them in early stages of the disease. ❑

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