Cancer Pain and Emotional Distress: A Cross-Sectional Study among Cancer Patients Receiving Chemotherapy in the Day –Unit of a General Hospital of Northern Greece

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Abstract: **Introduction: The present study explores the correlation of cancer pain and emotional distress among adult cancer patients, suffering from lung cancer and gastrointestinal cancer.**

Patients and Methods: The study was conducted from October to December 2014,in the Day Unit of a general hospital in northern Greece, among patients receiving chemotherapy.

The questionnaires used for the study consisted of Numeric Rating Scales (NRS) for the cancer pain evaluation and the DASS 21 Greek version for the emotional distress assessment (Depression-Anxiety-Stress). The patients who fulfilled the inclusion criteria and consented to participate in the study where 86.

Keywords: **anxiety, cancer pain, depression, emotional distress, stress.**

1. INTRODUCTION

Cancer is highly associated with pain, as the site and stage of the tumor, but also the recommended diagnostic and therapeutic interventions often cause pain to the patient. Cancer pain is the symptom that causes fear among patients and their families, as it is often identified with disease progression. It has characteristics of both chronic and acute pain, directly associated with tissue damage. A high percentage of patients report pain already at the first admission to the hospital, which is either nociceptive or neuropathic [1].

In Greece, almost 30,000 new cases of cancer are registered annually, according to the National Cancer Registry. It is assumed that 30-50% of them will have moderate to severe pain at some stage of the disease, and this percentage will rise to 75-95% in the terminal stage [2]. However, 25% of cancer patients suffering of pain are not adequately treated [3-7].

Chronic patients – including cancer patients - develop depression and emotional distress which are connected to dysfunction, cluster symptoms, poor quality of life and suicidal thoughts. The fatal diagnosis of cancer evokes psychological distress. Furthermore, the disease sometimes produces depression, due to paraneoplastic syndromes or the disregulated immune response of the body, which is considered as a causal link between cancer and depression.

The prevalence of depression in cancer patients is two to four times higher than the general population, especially those with advanced disease, or those receiving palliative care. It is estimated that one out of four cancer patients is suffering from undiagnosed depression. Depression is very common in many cancer types, such as oropharyngeal, breast, lung and pancreatic cancer. In pancreatic cancer, depression seems to have the highest prevalence among gastrointestinal cancers,

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almost 50% of patients, often existing prior to diagnosis. Colorectal cancer, lymphomas and gynaecological cancer are also associated to emotional distress [8]. Almost in all cases pain co-exists with depression[9]. Pain intensity shows similar variation to depression, both affecting the patient's quality of life. When pain is adequately treated, depression is also well controlled. Antidepressants are also effective in alleviation of cancer neuropathic pain. It is estimated that cancer pain, depression and cognitive deterioration are pathogenetically similar. Pain also uses the same anatomic pathways and neurotransmitting substances that are responsible for oncogenesis, tumor natural history and depression development[9,10-14]. Depression is associated with cancer outcome, increasing cancer mortality, but not strongly associated with cancer relapse [15].

2.   METHOD

This is a cross-sectional study, based upon the main hypothesis that depression is related to cancer pain. It took place in the Day Unit of a general hospital in Thessaloniki, where adult patients suffering from lung or gastrointestinal cancer are receiving chemotherapy. The study was carried out from October to December 2014. The study inclusion criteria where a) patients should have already received two chemotherapy regiments and b) patients didn't have any known cerebral metastases.

Permission was asked from the Hospital's Ethics Committee. Patients participated anonymously and voluntarily, after written informed consent was obtained. A total number of 100 questionnaires were given to patients, 86 where returned, 84 where properly completed. Most of the questionnaires where completed during the chemotherapy administration by the nurse's help offered when needed.

The questionnaire consisted of four parts: a) Sample Demographics b) Disease description and information   c)Pain information: The intensity and characteristics of pain where   assessed by Numeric Rate Scales (NRS), numbered from 0 to 10, where 0=no pain and 10= extremely severe pain[16] d)Emotional situation information: it is assessed with DASS21 questionnaire - Greek version[17] - estimating Depression-Anxiety- Stress (D-A-S) scores. It consists of 21 likert-scale statements, referring to the previous week, where the patient has to indicate his feelings, reporting 0=I strongly disagree to 3=I strongly agree, to each statement. From the total number of 21, seven statements score depression levels, seven are for anxiety scoring and seven for stress scoring. DASS21 questionnaire is a quantitative psychometric tool, used in everyday clinic patient evaluation. It is not a diagnostic tool and it should be used only as a reference, when a patient needs an expert's evaluation and treatment[18].

The data statistical analysis was carried out with the SPSS 17.0 Multilanguage statistical program and x-test, Fisher's exact test and Pearson's X^2 where used for variables' co- relations.

3.   RESULTS

The demographic characteristics of the sample are shown in Table 1. Most of the patients (60.5%) have lung cancer and the others (39.5%) have gastrointestinal cancer, mainly colorectal cancer. All types of cancer as shown in Table 2.

Approximately one third of the sample (30,3%) reports no pain, one out of three patients (36.8%) report mild to moderate pain and 32.9% of the patients report severe pain. Most of the patients (75.6%, N=75) report pain in a single body area, mostly abdominal area in gastrointestinal cancer and thoracic area in lung cancer. Other painful areas reported are mostly the metastases sites, or areas affected by treatment (e.g. chemotherapy, surgery). Some patients report two aching areas, some three and even four pain spots (4.7%, N=4).

The 19.8% of the patients (N=17) report hand and foot numbness, with a statistical significant co-relation to either 'superficial' or 'deep' pain with t-test correlations p=0.001 and p=0.000 respectively.

In the Numeric Rate Scale (NRS) in the question 'how tolerable your pain is?' (0= tolerable pain, 10= unbearable pain) most of the patients (36.9%) indicated their pain as unbearable (severe-extremely severe) pain, while the 35.5% of the sample describes moderately tolerable pain. Only 27.6% of the patients report tolerable pain. Pain tolerance and intensity are similar at both cancer types (lung and gastrointestinal).

Concerning the correlation of pain and psychological variables, 55.8% of the patients have a Normal depression score in the DASS21 questionnaire, while   30.2% has a Mild to Moderate score and 14%   has severe to extremely severe depression score.

Normal anxiety score has the 50% of the sample, 33.8% reports a Mild to Moderate anxiety score and Severe to Extremely Severe anxiety reports the 16.3% of the sample.

Normal stress score has the 52.3% of the patients, Mild to Moderate reports the 31.4% and Severe to Extremely Severe stress reports the 13.9% of the sample.

The sample percentages are similar for the three psychological parameters. As it is presented in Table 3, Pearson's Correlation shows that there is a statistical significant relation for depression and anxiety [r=0.567, N=84, p=0.00] for depression and stress [r=0.583, N= 84, p=0.00] and for anxiety and stress [r=0.479, N=84, p=0.00].

Intensity and tolerance in Cancer pain are definitely related to the psychometric parameters of the study, with statistically significant co-relations, implying that cancer pain is highly associated with emotional distress. Pain intensity is related to depression [r=0.192, N=76, p=0.097], anxiety [r=0.314, N=76, p=0.006] and stress [r=0.238, N=76, p=0.038]. Pain tolerance also has statistically significant correlation to Depression, [r=0.364, N=75, p=0.01], Anxiety [r=0.355, N=75,p=0.02] and Stress [r=0.305,N=75,p=0.08].

Patients who receive analgesics (50%) present significant correlation to anxiety [t(81)=2.4,p=0.019] and stress [t(81)=2.071, p=0.042]. Patients use analgesics such as NSAIDs, paracetamol and opioids, mostly prescribed by their doctor. Some patients (7%) report that they buy paracetamol on their own, because it is not prescribed, according to health policy. One out of four patients is receiving difosfonic agents for bone metastases and they present an increased median score for Depression, no statistically significant [MD=5.33, SD=5.36, t(78)=0.283, p=0.508]. Metastatic disease (61.6% of the sample) has a statistically no significant correlation to depression [p=0.77], anxiety [0.517] and stress [p=0.63]. Antidepressants are prescribed for the 14.5% of the patients by other doctor specialties e.g. neurologists.

There are no statistically significant variances in the psychological parameters in the two cancer types, although gastrointestinal cancer patients have a slightly higher stress score (MD= 8.0, SD= 5.23), compared to lung cancer patients (MD=6.68, SD=4.33) with statistically no significant difference [t-test: t (82) =

-1,249, p=0.215].

Patients who have undergone a surgery have MD= 8, SD= 5.07 for stress, while those who did not have a surgery have MD= 6.94, SD=4.36, statistically not significant difference [t-test: t (80) =1,011, p=0.315]. Anxiety is negatively related to surgery, with no significant relation [t (80) =-0.286, p=0.775]. Surgery is also negatively related to depression, with statistically no significant correlation [p=0.78].

Regarding the stress score, patients who have received 2-6 regiments (MD=6.25, SD= 4.38) compared to those who have received more than 7 regiments (MD=8.25, SD= 4.91) have a statistically significant correlation to stress score [t-test: t(82)=-1,972, p=0.052].

Emotional distress relates to the patients' Performance Status, not in a statistically significant level. Patients with PS (ECOG) 0-1 have a Normal score in Depression, where patients with PS 4 have a Mild to Moderate depression, but Severe to Extremely Severe stress. Most of the patients in our sample have PS 2 (ambulatory) and they have mainly Normal stress score, with 14% having extremely stress score and most of them (65%), have a Normal depression score.

As far as the gender is concerned, women do have higher scores in depression, anxiety and stress, compared to men. Women also give higher intensity and less tolerance in cancer pain than men. Both these differences have no statistical significance [p=0.07].

4. DISCUSSION

The study results refer to a specific sample, as they describe adult patients, mostly retired due to age, treated in one Day Unit, in one region of the country. Furthermore, they suffer from either lung or gastrointestinal cancer.

Most of the patients are taken care of a 'caregiver', usually a spouse or child, who undertakes tasks such as communication with doctors for drug prescription and treatment options for the disease and the problems that it causes to the patient.

Most of the patients report pain; one out of three patients (33%) reports severe pain. Cancer pain relates to the cancer site, diagnostic and treatment procedures. The Day Unit treatment is provided by doctors (oncologists) and nurses, there are no other medical specialists, neither psychologists. Pain management is usually assigned to the oncologist, during the routine medical examination, when pain is communicated from the patient as a symptom. Some patients buy paracetamol on their own, managing in a personal way their pain. Prescription of opioids is influenced by medical, ethical, cultural and legislative considerations [19]. Furthermore opioid side effects and interactions with other drugs and addiction fear, may lead to patients incompliance to pain treatment, therefore a Pain Clinic should be recommended to cancer patients. Pain Clinics are not well known in Greece, and there is no Pain Clinic in the hospital that the study was carried out. Only 3.5% of the sample seeked for help in a pain clinic, by its own initiative.

Mild to Moderate Depression is reported by the 30.2%, while the 15% of the sample reports Severe to Extremely Severe Depression. Anxiety and stress have similar rates. There is a significant correlation between the three psychological variables and there is also a statistically significant correlation of emotional distress and cancer pain, as a conclusion from our study results.

Diagnostic and treatment procedures produce emotional distress, although not statistically significant in our sample.

Stress scores are higher in the patients who have had a surgery for their tumor, which is probably indicative that surgery causes post-traumatic stress, especially when it results in a colostomy.

Anxiety scores are higher in patients with no metastatic disease, probably because they are at the early diagnosed stage and they fear more for the disease outcome. Patients who have received more than seven chemotherapy regiments, tend to develop higher scores in depression and anxiety, compared to those who have received less than six regiments. Although there is not a statistically significant difference, it implies that when chemotherapy regiments are increased- probably due to disease progression, patients are more depressed and anxious for the disease outcome.

5. CONCLUSIONS

Cancer pain is multidimensional, with both physical and psychological symptoms. Pain intensity and tolerance are related to emotional distress, verifying our main hypothesis that cancer pain and depression have a bidimensional relation. Cancer patients should be treated by health specialists trained in pain management and patient communication.

In Greece, due to cultural characteristics cancer patients often underestimate pain intensity; often patients, caregivers and health professionals show skepticism towards opioid use. Lack of sources due to economy crisis, combined with legislation and regulatory policies, limit the prescription ability and the use of opioids in the proper ways. Changes in health policy and development of an adequate number of well organized Pain Clinics would improve the treatment provided to cancer patients in Greece.

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APPENDIX - A

Table 1 Sample Demographics

TABLE 1- SAMPLE DEMOGRAFICS	
	N (%)
GENDER	
Men	*63 (73.3)*
Women	*22 (25.6)*
Total	*86 (100)*
AGE	
36-45 years	*5 (5.8)*
46-55 years	*16 (18.6)*
56-65 years	*32 (37.2)*
56-75 years	*29 (33.7)*
76+ years	*4 (4.7)*
EDUCATION	
Elementary	*34 (39.5)*
High school	*14 (16.3)*
College	*19 (22.1)*
Technological Institution (TEI)	*8 (9.3)*
University	*10 (11.6)*
MARITAL STATUS	
Single	*5 (5.8)*

Married	*72 (83.7)*
Divorced	*4 (4.7)*
Mate	*1 (1.2)*
Widow	*4 (4.7)*
OCCUPATION	
Freelance	*18 (20.9)*
Employee	*9 (10.5)*
Civil Servant	*11 (12.8)*
Unemployed	*3 (3.5)*
Retired	*42 (48.8)*
Houselold	*2 (2.3)*
RESIDENCE	
Hospital area (city)	*48 (55.8)*
Distant area	*37 (44.2)*

Table 2: Cancer Information

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	N (%)
LUNG CANCER	**52 (60.5)**
Small Cell	12 (14)
Adenocarcinoma	16 (18.6)
Squamus	11 (12.8)
Bronchial	1 (1.2)
Neuroendocrine	2 (2.3)
GASTROINTESTINAL CANCER	**34 (39.5)**
Colorectal cancer	19 (22.1)
Stomach	6 (7.0)
Pancreatic cancer	5 (5.8)
Liver -gallbladder	3 (3.5)
Two types	1 (1.2)
METASTASIS	
YES	28 (32.6)
NO	53 (61.6)
PERFORMANCE STATUS (ECOG 0-5)	
ECOG 0-1	17 (19.8)
ECOG 2	35 (40.7)
ECOG 3	17 (19.8)
ECOG 4	7 (8.1)
SURGERY	
NO	49 (57.0)
YES	34 (39.5)
(Median time interval =13.69 months)	
CHEMOTHERAPY REGIMENTS	
2-6	N=44
>7	N=40

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Table 3: Pain Intensity and Pain Tolerance correlation with Depression- Anxiety-Stress. Depression-Anxiety- Stress correlation

TABLE 3. PAIN and EMOTIONAL DISTRESS CORRELATION		
Pain Intensity (N=76)		
Pain Tolerance	r=0,700**	p=0,000
Depression	r= 0,192	p=0,0,97
Anxiety	r= 0,0314**	p=0,006
Stress	r= 0,238**	p=0,038
Pain Tolerance(N=75)		
Depression	r=0,364**	p=0,001
Anxiety	r=0,355**	p=0,002
Stress	r=0,305**	p=0,008
Depression (N=84)		
Anxiety	r=0,567**	p=0,000
Stress	r=0,583**	p=0,000
Anxiety (N=84)		
Stress	r=0,479**	p=0,000
Depression	r=0,567**	p=0,000
Stress (N=84)		
Depression	r=0,583**	p=0,000
Anxiety	r=0,479**	p=0,000

Pearson Correlation (r), N=number of patients

***Correlation is significant at the 0.01 level (2-tailed)*