

SCANXIETY AND PSYCHOLOGICAL DISTRESS IN CANCER PATIENTS AT ROUTINE FOLLOW UP VISITS

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ABSTRACT:

Background: Follow-up care for cancer patients after definitive treatment, includes: routine follow up visits and surveillance imaging to detect recurrence, new primaries, and maintaining quality of life. Scans may cause emotional - distress, including anxiety and fear of recurrence, a condition called "scanxiety", which may lead to poor quality of life.

Aim of work: To assess scanxiety and psychological distress associated with surveillance imaging at routine follow up visits among cancer patients, and different factors affecting its severity.

Patients and methods: Consecutive sample of (179) cancer patients attending outpatient clinic at oncology department at Ain Shams University Hospital in Cairo, Egypt, for surveillance imaging from the period between October 2019 to February 2020. The General Health Questionnaire (GHQ), was used as a screening tool for psychological distress; patients with score ≥ 7 , were subjected to Hamilton Anxiety Rating Scale (HAM-A), to assess the severity of anxiety symptoms during the periods surrounding imaging scans. Sociodemographic and clinical data were obtained from the patients and from the medical records.

Results: 179 Participants, with mean age of 52.64 (SD= 11.20), and 69.8% were females. Most of the patients had some degree of psychological distress during the time of follow up scans, as 60.9% of patients (n=109) found to have a score ≥ 7 at General Health Questionnaire. Using Hamilton Anxiety Scale, Mild degree of anxiety (HAM-A score ≤ 17) was found in 16.2% of patients, mild to moderate anxiety (score 18-24) in 14.0 %, moderate to severe anxiety (score 25-30) in 17.3%, and very severe anxiety (score 31-56) in 13.4%. Moderate to severe anxiety was the most common degree of anxiety in our patients (28.4 % of patients with anxiety). Significant relationship was found between high GHQ score: (≥ 7) and age of patients (mean age of: 50.7 and SD 11.16), Not having children, type of cancer, and years since diagnosis (median of 2 years). The highest prevalence of scan-associated distress in our study was found in patients with CNS tumor, skin cancer, sarcoma and head and neck cancer, and lowest prevalence in breast cancer.

Conclusion: Surveillance imaging scans can provoke anxiety and fear of recurrence in cancer patients, so these studies should be justified, and supported by high quality evidence and guidelines recommendations. And psychological care should be a part of follow up care for cancer patients.

Key words: scanxiety, routine follow up, anxiety, cancer patients.

INTRODUCTION:

At the end of radical treatment of cancer, follow-up is advised with the aim of improving disease-specific (DSS) and overall survival (OS) by early identification of tumour recurrence or second primary cancer, so that patients have the chance for potentially curative treatment.⁽¹⁾

However, the optimum surveillance strategy for many cancers is not identified, and recent results from randomized trials have not shown significant survival benefits from intensive surveillance.⁽²⁾

Routine follow-up visits may increase fear and stress among cancer survivors, as it has been reported that anxiety is worsened by clinical assessment and imaging studies, which may act as a reminder of cancer and the continued risk of relapse.⁽³⁾

Cancer-related distress is linked to lower quality of life, decreased satisfaction with treatment, and poor overall survival⁽⁴⁾.

Nowadays, scans are ubiquitous and causes a financial burden on our health care systems⁽⁵⁾. These routine scans may create "scanxiety" and may worsen cancer-related distress, and act as a threat to cancer patients. "Scanxiety" refers to the clinically debilitating distress, patients with cancer feel during the period surrounding imaging scans.⁽⁶⁾

AIM OF THE WORK:

The purpose of this study is to investigate the relationship between scanxiety and psychological distress and surveillance imaging at routine follow up visits among cancer patients, and different factors affecting its severity.

PATIENTS AND METHODS:

We conducted a cross sectional survey on consecutive sample of 179 cancer patients, being at least 18 years old, and attending outpatient clinic for routine follow up (no recurrence or metastasis) at oncology department at Ain Shams University Hospital in Cairo, Egypt, from the period between October 2019 to February 2020. All the patients had a recent surveillance scan in the last 4 weeks.

The Arabic translated version of General Health Questionnaire (GHQ)⁽⁷⁾, was used as a screening tool for psychological distress, patients with score ≥ 7 , were subjected to the Arabic version of Hamilton Anxiety Rating Scale (HAM-A)⁽⁸⁾, to assess the severity of anxiety symptoms at the time surrounding imaging scans. Sociodemographic and clinical data were obtained from the patients and from the medical records. Patient are approached by the investigator in the waiting room, and were asked to participate in the survey, and given a consent form.

Statistics:

The collected data were revised, coded, tabulated and introduced to a PC using Statistical package for Social Science (SPSS 20.0.1 for windows; SPSS Inc., Chicago, IL, 2001).

Quantitative variables are expressed as mean and SD, or Median and Interquartile range (IQR) according to distribution of data. Qualitative variables are expressed as frequencies and percent. Student test and Mann Whitney Test were used to compare a continuous variable between two study groups. Chi square test was used to examine the relationship between Categorical variables. A P-value < 0.05 was considered statistically significant.

RESULTS:

The study included 179 patients, 69.8% (n= 125) were females and 30.2% were males (n= 54), with mean age of 52.64 (SD= 11.20). Most of the patients were married

(92.7%) and most of them were having children (92.2%). 48.6% were illiterate, while 45.3% were having a primary or secondary school and 6.1 were having university education. 73.2% were not working as shown in table 1, 2.

Table 1, 2: Demographic and clinical characters of the patients.

		No. = 179
Age	Mean±SD	52.64 ± 11.20
	Range	21.00 – 73.00
Sex	Male	54 (30.2%)
	Female	125 (69.8%)
Years since diagnosis	Median (IQR)	2 (1 – 5)
	Range	1 – 21

Table: 2

		No.	%
Marital status	Single	6	3.4%
	Married	166	92.7%
	Divorced	2	1.1%
	Widow	5	2.8%
Child	No child	14	7.8%
	Have children	165	92.2%
Education level	Not educated	87	48.6%
	School education	81	45.3%
	University education	11	6.1%
Work	Not working	131	73.2%
	Working	48	26.8%

As regard to the diagnosis of patients: breast cancer was the most common one, found in 28.5% of patients. GIT cancer in 18 % (most of them were colorectal carcinoma, 14% of all patients), Gynecological cancers in 13.4%. Genitourinary, head and neck and thyroid cancer, each in 7.3% of the patients. Lung cancer in 6.7%, sarcoma and lymphoma each in 2.2 %, thymic tumors in 1.1 %, skin cancer in 0.6 %.

The range of number of years since diagnosis in our study was (1-21) with median of (2) years.

We found that most of the patients had some degree of psychological distress at the time of follow up scans, as 60.9% of patients (n=109) had a score ≥ 7 in General Health Questionnaire.

Using Hamilton anxiety scale, Mild degree of anxiety (HAM-A score ≤ 17) was found in 16.2% of patients, mild to moderate (score 18-24) in 14.0 %, moderate to severe (score 25-30) in 17.3%, and very severe anxiety (score 31-56) in 13.4%. Moderate to severe anxiety was the most common degree of anxiety in our patients (28.4 % of patients with anxiety) as shown in table 3.

Table 3: General Health Questionnaire (GHQ) score, and Hamilton Anxiety Rating Scale (HAM-A) score in our patients.

		No. = 179
GHQ score	GHQ score < 7	70 (39.1%)
	GHQ score ≥ 7	109 (60.9%)
HAM-A score	Median (IQR)	13 (0 - 26)
	Range	0 – 44
HAM-A score	No anxiety if =0	70 (39.1%)
	Mild anxiety if ≤ 17	29 (16.2%)
	Mild to moderate anxiety 18-24	25 (14.0%)
	Moderate to severe anxiety 25-30	31 (17.3%)
	Very severe anxiety 31-56	24 (13.4%)

Significant relationship was found between high GHQ score (≥ 7) and age of patients (p value= 0.004) with mean age of: 50.7 and SD 11.16. No significant relationship between GHQ and gender.

As regard to the marital state, having children, educational level and working status: there was only a significant relationship between having children and GHQ score (p value = 0.047). Most of patients with no children had a GHQ score ≥ 7, probably due to loss of social support.

Highly significant relationship was found between (GHQ) score and number of years since diagnosis. With median of 2 years since diagnosis in patients with GHQ score ≥ 7, and median of 5 years in patients with GHQ score < 7.

Also, a highly significant relationship between HAM score and years since diagnosis with very severe anxiety for median of 1 year, moderate to severe at median of 2 years, mild to moderate anxiety at 3 years and no anxiety at median of 5 years as shown in table 4,5 and 6.

Table 4,5: The relation between Demographic and clinical data with GHQ score.

		GHQ score <7	GHQ score ≥ 7	Test value	P-value	Sig.
		No. = 70	No. = 109			
Sex	Male	20 (28.6%)	34 (31.2%)	0.139*	0.709	NS
	Female	50 (71.4%)	75 (68.8%)			
Age	Mean±SD	55.66 ± 10.65	50.70 ± 11.16	2.953•	0.004	HS
	Range	28 – 73	21 – 70			
Years since diagnosis	Median (IQR)	5 (2 - 9)	2 (1 - 3)	-5.097‡	0.000	HS
	Range	1 – 21	1 – 11			

Table:

		GHQ score <7		GHQ score >7		Test value*	P-value	Sig.
		No.	%	No.	%			
Marital	Single	2	2.9%	4	3.7%	1.400	0.706	NS
	Married	66	94.3%	100	91.7%			
	Divorced	0	0.0%	2	1.8%			
	Widow	2	2.9%	3	2.8%			
Child	No child	2	2.9%	12	11.0%	3.929	0.047	S
	Have children	68	97.1%	97	89.0%			
Education level	Not educated	37	52.9%	50	45.9%	0.834	0.659	NS
	School education	29	41.4%	52	47.7%			
	University education	4	5.7%	7	6.4%			
Work	Not working	51	72.9%	80	73.4%	0.006	0.937	NS
	Working	19	27.1%	29	26.6%			

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Table 6: The relation between demographic and clinical data with HAM-A score.

		HAM-A score					Test value	P-value	Sig.
		No anxiety	Mild anxiety	Mild to moderate anxiety	Moderate to severe anxiety	Very severe anxiety			
		No. = 70	No. = 29	No. = 25	No. = 31	No. = 24			
Age	Mean ±SD	55.66 ± 10.65	45.62 ± 10.98	52.16 ± 11.03	53.26 ± 10.71	52.00 ± 10.80	4.499	0.002	HS
	Range	28 – 73	21 – 68	23 – 67	32 – 70	29 - 67			
Sex	Male	20 (28.6%)	6 (20.7%)	6 (24.0%)	15 (48.4%)	7 (29.2%)	6.669 *	0.154	NS
	Female	50 (71.4%)	23 (79.3%)	19 (76.0%)	16 (51.6%)	17 (70.8%)			
Years since diagnosis	Median (IQR)	5 (2 – 9)	2 (1 – 4)	3 (1 – 4)	2 (1 – 3)	1 (1 – 2)	31.967	0.000	HS
	Range	1 – 21	1 – 9	1 – 11	1 – 7	1 – 8			

A significant relationship was also found with the type of cancer. As some form of anxiety was found in: almost all patients with CNS tumor, skin cancer, and sarcoma. In 84.6 % of head and neck cancer patients, 80% of patients with lymphoma, 75 % of lung cancer patients, 69.8 % of thyroid cancer patients, 54.2 % of gynecological

cancer patients, 53.8% of genitourinary cancer, 53.1 % of GIT cancer, 50 % of thymic tumors, 49% of breast cancer patients. The highest median of HAM-A score was found in skin cancer patients (36), head and neck cancer (35), CNS tumor (25), lung cancer (25) as shown in table 7.

Table 7: anxiety and its severity in different types of cancer.

Diagnosis	No anxiety		Mild anxiety if < 17		Mild to moderate anxiety 18-24		Moderate to severe anxiety 25-30		Very severe anxiety 31-56		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Lung	3	25.0%	2	16.7%	0	0.0%	5	41.7%	2	16.7%	12	6.7%
genitourinary	6	46.2%	2	15.4%	2	15.4%	3	23.1%	0	0.0%	13	7.3%
Head and neck	2	15.4%	0	0.0%	1	7.7%	3	23.1%	7	53.8%	13	7.3%
GIT	15	46.9%	4	12.5%	3	9.4%	6	18.8%	4	12.5%	32	17.9%
Gynaecological cancer	11	45.8%	2	8.3%	5	20.8%	2	8.3%	4	16.7%	24	13.4%
Breast	26	51.0%	9	17.6%	8	15.7%	5	9.8%	3	5.9%	51	28.5%
CNS	0	0.0%	1	25.0%	0	0.0%	2	50.0%	1	25.0%	4	2.2%
Thymic	1	50.0%	1	50.0%	0	0.0%	0	0.0%	0	0.0%	2	1.1%
Sarcoma	0	0.0%	2	50.0%	1	25.0%	0	0.0%	1	25.0%	4	2.2%
Lymphoma	2	20.0%	2	20.0%	4	40.0%	2	20.0%	0	0.0%	10	5.6%
skin cancer	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	100.0%	1	0.6%
Thyroid	4	30.8%	4	30.8%	1	7.7%	3	23.1%	1	7.7%	13	7.3%

DISCUSSION:

For cancer patients who have survived after treatment, the persistent expectation that cancer may relapse is a primary cause of anxiety and can have a significant impact on

their physical, social and spiritual well-being⁽⁹⁾.

The International Psycho-Oncology Society (IPOS) and 68 affiliated organizations have developed a standard of

care that advocates identifying distress monitoring as the "6th vital sign".⁽¹⁰⁾

Distress is described as "an uncomfortable emotional experience of a psychological, spiritual or social nature. Distress exists along a continuum, ranging from common feelings of insecurity, stress, and fear to problems that can become debilitating, like depression, anxiety, panic, social withdrawal, and spiritual crisis"⁽¹¹⁾. Surveillance imaging studies may create "scanxiety" and may worsen cancer-related distress. 'Scanxiety' refers to the clinically debilitating distress, patients with cancer feel during the period surrounding imaging scans.⁽⁶⁾

These surveillance studies should be ordered at a frequency and in the duration compatible with the existence of high risk of recurrence and to include only testing with strong positive and negative predictive values, and only when early detection of recurrence will improve survival or quality of life.⁽¹²⁾

There are little studies that specifically measured scan-associated distress, and its consequences on quality of life of cancer survivors. However, numerous studies have concluded that imaging can cause serious distress when healthy individuals perform screening scans for cancer.⁽¹³⁾

In a systematic review comparing patients with and without a family history of breast cancer, those with a family history reported substantially higher anxiety than those with no family history during the mammogram procedure and up to 6 weeks after mammogram.⁽¹⁴⁾

In our study, we found that most of the patients (60.9%, n=109), had some degree of psychological distress at the time surrounding follow up scans. With moderate to severe anxiety was the most common form of anxiety.

We found that scan-associated distress was related to age of patients, not having

children, type of cancer, and the duration since diagnosis.

The highest prevalence of anxiety in our study was found in CNS tumors, skin cancer, sarcoma and head and neck cancer. Those patients are usually short-term survivors, not in complete remission, and having long-term treatment complications with more somatic symptoms, impaired function and serious psychological reactions.

The lowest prevalence was found in breast cancer patients, as those patients had a complete remission, with less frequent surveillance imaging and hormonal treatment may act as a reassuring agent.

Bauml et al, 2016⁽¹⁵⁾ study evaluated the scan-associated stress among patients with relapsed or metastatic non-small cell lung cancer (NSCLC), using the Impact of Event Scale 6 (IES-6) instrument. 82 percent of patients reported some degree of scan-related distress. With no clinical or demographic risk factor was correlated with the severity of the distress. After applying the Functional Assessment of Cancer Therapy – Lung (FACT-L) instrument, severity of Scan-related anxiety was found to be associated with decreased quality of life.

Patients in this study were a heterogeneous group, with different sites of metastasis, and different treatment modalities. Unlike patients in our study, who were free of recurrence or distant metastasis, and were on follow up with no active treatment.

In *Thompson et al, 2010* study⁽¹⁶⁾, series of qualitative interviews were conducted with 82 long-term lymphoma survivors. Most of patients reported some degree of scan-associated distress. They observed that severe anxiety was associated with poor doctor-patient relationship and history of previous relapse. The last surveillance scan in this study had a mean of (14 months

before the interview). In our study, the follow up scans were in the last 4 weeks.

Our study has a number of limitations: First, used questionnaires were not designed to measure scan-associated distress, also we conducted a cross sectional study; and longitudinal studies may be beneficial in monitoring the course of this type of distress, and to evaluate its effect on quality of life and adherence to the follow-up programs.

Conclusion:

Surveillance imaging scans can provoke anxiety and fear of recurrence in cancer patients, as scans remind the patients of their previous illness, and patients become preoccupied by the possibility of cancer recurrence.

So these imaging studies should be justified, and supported by high quality evidence and guidelines recommendations. And psychological monitoring should be a part of follow up care for cancer patients, so, early intervention and further psycho-social support can take place if necessary.

Conflicts of interest: There are no conflicts of interest.

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قلق الفحوصات والضغوط النفسية عند مرضى السرطان أثناء زيارات المتابعة الدورية

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المقدمة : ان هدف اجراء الاشعات الدورية اثناء الزيارات الروتينية في فترة المتابعة عند مرضى السرطان هو الاكتشاف المبكر لارتجاع نفس نوع السرطان، أو نوع آخر، والحفاظ على جودة حياة المريض. ولكن قد تتسبب تلك الاشعات في حدوث قلق الفحوصات , وتفاقم الضغط النفسي المصاحب لمرض السرطان والذي قد يؤثر بالسلب على جودة حياة المريض .

الهدف من الدراسة: دراسة العلاقة بين الاشعات الدورية اثناء الزيارات الروتينية في فترة المتابعة عند مرضى السرطان ، وقلق الفحوصات وزيادة الضغوط النفسية.

الطرق والحالات : تم إجراء مسح على عينة مستعرضة متتالية (١٧٩) مريض سرطان أثناء زيارتهم للعيادات الخارجية بغرض المتابعة الدورية بقسم الأورام في مستشفى عين شمس الجامعي. وقد خضع المرضى لأحد الاشعات الروتينية خلال الاربع اسابيع التي سبقت اجراء المسح. (ولقد استهدفت الدراسة المرضى الذين لم يعانون من وجود ثانويات او من ارتجاع للمرض , قبل اجراء تلك الاشعات). وتم الكشف عن زيادة الضغط النفسي باستخدام استبيان الصحة العامة. وبالنسبة للمرضى الحاصلين على درجة: (٧ فاكتر) , فقد تم استخدام مقياس هاميلتون لتقييم شدة أعراض القلق المصاحب لتلك الفحوصات.

النتائج : اظهرت الدراسة أن معظم المرضى قد عانوا من درجة ما من الضغط النفسي في الفترة المحيطة بالاشعات الروتينية ، حيث حصل ٦٠,٩% من المرضى (عدد = ١٠٩) على ٧ فاكتر, في استبيان الصحة العامة. وباستخدام مقياس هاميلتون , تبين ان نسبة ١٦,٢% قد عانوا من الدرجة البسيطة من القلق (مجموع درجات اقل من ١٧) , القلق البسيط الى المتوسط في ١٤% من المرضى (مجموع درجات ١٨-٢٤) , متوسط الى شديد في ١٧,٣% (مجموع درجات ٣٠-٢٥) , قلق شديد جدا او حاد في ١٣,٤% (مجموع درجات ٣١-٥٦) .

واوضحت الدراسة وجود علاقة ذات قيمة احصائية عالية الوضوح بين الحصول على ٧ درجات فاكتر في استبيان الصحة العامة وبين عمر المرضى (متوسط : ٥٠,٧ و بانحراف معياري=١١,١٦) , وعدم انجاب اطفال , ونوع السرطان , و عدد السنوات منذ تشخيص المرض (متوسط: سنتين). وقد كان قلق الفحوصات اكثر انتشارا بين مرضى اورام الجهاز العصبي المركزي وسرطان الجلد والرأس والرقبة والساركوما , بينما كان اقل انتشارا بين مرضى سرطان الثدي.

الاستنتاج : قد يؤدي اجراء الاشعات الروتينية في فترة المتابعة عند مرضى السرطان الي حدوث قلق الفحوصات , فيجب ان نتبع ارشادات الممارسة المعتمدة على ادلة علمية قوية , وان يتزامن توقيت ومعدل تكرار هذه الاشعات , مع وجود خطر ارتجاع المرض , وان تكون الصحة النفسية من اولويات برامج المتابعة الدورية لمرضى السرطان.