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A Study of Relationship between Psychological Stress and Cancer

Kshama Vairagi[1]* Dr. Sujata Gupta Kedar[2]

[1]Research Counseller at Tata Memorial Hospital, University-Pebble Hills University

[2]Head & Associate Prof at Dept. Of human Development-Bangalore

Abstract – Psychological or Psychosocial push has been developing as one of the key elements related with tumor start, development, and metastasis. Amassing information, be that as it may, has for the most part centered around tumor movement because of the conflicting aftereffects of disease etiology caused by enthusiastic anxiety. Sorrow is firmly connected to push and instigates hypothalamic-pituitary-adrenal (HPA) pivot enactment and in addition thoughtful sensory system (SNS) down to invulnerable cell observation. The most clear impact of worry in ladies with bosom malignancy and those in danger is the start of negative wellbeing behavioral reactions, for example, expanded smoking and liquor utilization, poor dietary patterns, and absence of activity and rest, which are all related with expanded tumor chance.

Keywords: Stress, Depression, Cancer, HPA, SNS.

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INTRODUCTION

Pain or sorrow can prompt a poor repair of harmed DNA, a strange chromatid trade, and diminished apoptotic action. As needs be, mental or behavioral factors and stress can impact numerous physiological and neurotic illness results including disease (Andersen et al. 1994, Andersen et al. 1998; Bovbjerg 1991; Levy et al. 1985, 1987; Spiegel and Kato 1996), as deliberately inspected throughout the previous three decades. Research in the course of recent years in the field of psychoneuroimmunology (PNI) and numerous clinical and epidemiological examinations have given much commitment to the comprehension of the impact of mental weight on human sicknesses, with specific accentuation on malignancy identified with stifled invulnerable reactions to tumors and stress-actuated adjustments in the tumor microenvironment. Subjects who are immunosuppressed either through pharmacological means or by means of immunodeficiency maladies have an expanded danger of growth (Herberman and Ortaldo 1981; Cohen and Rabin 1998).

Stress has received a number of definitions in scientific literature, more or less accurate or complete. One of the most commonly accepted psychological definitions has been that stress occurs when demands from the environment challenge an individual's adaptive capacity and has been associated with immune system dysfunctions. Distress is a common variable in oncologic studies and is a multifactorial, unpleasant experience of an emotional, psychological, social or spiritual nature that interferes with the ability to cope with cancer. Psychological distress can worsen physical manifestation of cancer (Artherholt and Fann, 2012).

Stress and depression- can influence tumor progression at a cellular level and several authors demonstrated in their articles the inter-relationships between stress, immune reactivity and tumor development (Bailey, et. al., 2009). Once a cancer patient is affected by stress, specific pathways within the brain lead to the activation of the hypothalamic-pituitary-adrenal axis as well as the central sympathetic nervous system (Cohen and Rabin, 1998). The stress response consists in releasing key peripheral mediators such as catecholamines and glucocorticoids the role of which in the pathophysiology of chronic stress is extraordinarily complex and controversial (Fashoyin-Aje, et. al., 2012). Moreover, in cancer, catecholamines can enhance carcinogenic properties of prostate, ovary, breast and colon tumor cells (Fawzy, et. al., 1990), while glucocorticoids are immune-suppressive agents (Lutgendorf, et. al., 2011). It has been reported that the immune system plays an important role in the development of cancer (Lutgendorf, et. al., 2005. Lutgendorf, et. al., 2010. McDonald, et. al., 2005). Different immune factors, such as immune cells and various interleukins, have a significant influence on the process of tumor development and appearance of metastases (Melhem-Bertrandt, et. al., 2011. Moreno-Smith, et. al., 2010). On the other hand, many studies have confirmed the influence of psychological factors on different aspects of the immune system, important in the process of tumor development (Segerstrom and Miller, 2004). Cellular-

mediated and humoral-mediated responses are affected in general psychiatry traumatic disorders, as is the production of cytokines.

Stress effect on cancer

With great interest in psychological factors that could affect the cancer etiology and progression, earlier studies suggested links between personality types and cancer etiology. Methodological problems in many of these studies, however, significantly hampered the interpretation of the links, and a great deal of important work in this area over the past three decades tremendously accelerated demonstration of potential effects of stress on tumor metastasis, the tumor microenvironment, and regulation of cell growth.

The data until 1997 was too inconsistent to find a relationship between stressor exposure and cancer etiology (Reiche et al. 2004; Antoni et al. 2006). In addition, depression and other psychological factors were not consistent predictors of cancer etiology (Antoni et al. 2006). Thus, it would only be detectable if considered in conjunction with known risk factors such as genetics, gender, site of cancer, age, and health behaviors, such as smoking.

What is psychological stress?

Psychological stress describes what people feel when they are under mental, physical, or emotional pressure. Although it is normal to experience some psychological stress from time to time, people who experience high levels of psychological stress or who experience it repeatedly over a long period of time may develop health problems (mental and/or physical).

Stress can be caused both by daily responsibilities and routine events, as well as by more unusual events, such as a trauma or illness in oneself or a close family member. When people feel that they are unable to manage or control changes caused by cancer or normal life activities, they are in distress. Distress has become increasingly recognized as a factor that can reduce the quality of life of cancer patients. There is even some evidence that extreme distress is associated with poorer clinical outcomes. Clinical guidelines are available to help doctors and nurses assess levels of distress and help patients manage it.

This fact sheet provides a general introduction to the stress that people may experience as they cope with cancer. More detailed information about specific psychological conditions related to stress can be found in the Related Resources and Selected References at the end of this fact sheet.

How does the body respond during stress?

The body responds to physical, mental, or emotional pressure by releasing stress hormones (such as epinephrine and norepinephrine) that increase blood pressure, speed heart rate, and raise blood sugar levels. These changes help a person act with greater strength and speed to escape a perceived threat.

Research has shown that people who experience intense and long-term (i.e., chronic) stress can have digestive problems, fertility problems, urinary problems, and a weakened immune system. People who experience chronic stress are also more prone to viral infections such as the flu or common cold and to have headaches, sleep trouble, depression, and anxiety.

Can psychological stress cause cancer?

Although stress can cause a number of physical health problems, the evidence that it can cause cancer is weak. Some studies have indicated a link between various psychological factors and an increased risk of developing cancer, but others have not.

Apparent links between psychological stress and cancer could arise in several ways. For example, people under stress may develop certain behaviors, such as smoking, overeating, or drinking alcohol, which increase a person's risk for cancer. Or someone who has a relative with cancer may have a higher risk for cancer because of a shared inherited risk factor, not because of the stress induced by the family member's diagnosis.

How does psychological stress affect people who have cancer?

Individuals who have tumor may locate the physical, enthusiastic, and social impacts of the illness to be distressing. The individuals who endeavor to deal with their worry with unsafe practices, for example, smoking or drinking liquor or who turn out to be more inactive may have a poorer personal satisfaction after malignancy treatment. Conversely, individuals who can utilize viable adapting procedures to manage stretch, for example, unwinding and push administration systems, have been appeared to have bring down levels of dejection, uneasiness, and manifestations identified with the disease and its treatment. In any case, there is no proof that fruitful administration of mental anxiety enhances malignancy survival.

Proof from exploratory investigations suggests that mental anxiety can influence a tumor's capacity to develop and spread. For instance, a few investigations have demonstrated that when mice bearing human tumors were kept limited or

disengaged from other mice conditions that expansion push their tumors will probably develop and spread (metastasize). In one arrangement of trials, tumors transplanted into the mammary fat stack of mice had substantially higher rates of spread to the lungs and lymph hubs if the mice were constantly worried than if the mice were not pushed. Concentrates in mice and in human malignancy cells developed in the lab have discovered that the anxiety hormone norepinephrine, some portion of the body's battle or-flight reaction framework, may advance angiogenesis and metastasis.

In another examination, ladies with triple-negative bosom tumor who had been treated with neoadjuvant chemotherapy were gotten some information about their utilization of beta blockers, which are drugs that meddle with certain anxiety hormones, earlier and amid chemotherapy. Ladies who revealed utilizing beta blockers had a superior possibility of surviving their malignancy treatment without a backslide than ladies who did not report beta blocker utilize. There was no contrast between the gatherings, be that as it may, as far as general survival.

Despite the fact that there is still no solid confirmation that anxiety specifically influences malignancy results, a few information do propose that patients can build up a feeling of defenselessness or misery when push ends up noticeably overpowering. This reaction is related with higher rates of death, in spite of the fact that the instrument for this result is hazy. It might be that individuals who feel powerless or sad don't look for treatment when they turn out to be sick, surrender rashly on or neglect to cling to possibly supportive treatment, take part in dangerous practices, for example, tranquilize utilize, or don't keep up a solid way of life, bringing about sudden passing.

How can people who have cancer learn to cope with psychological stress?

Emotional and social support can help patients learn to cope with psychological stress. Such support can reduce levels of depression, anxiety, and disease- and treatment-related symptoms among patients. Approaches can include the following:

- Training in relaxation, meditation, or stress management
- Counseling or talk therapy
- Cancer education sessions
- Social support in a group setting
- Medications for depression or anxiety
- Exercise

More information about how cancer patients can cope with stress can be found in the PDQ® summaries listed in the Related Resources section at the end of this fact sheet.

Some expert organizations recommend that all cancer patients be screened for distress early in the course of treatment. A number also recommend re-screening at critical points along the course of care. Health care providers can use a variety of screening tools, such as a distress scale or questionnaire, to gauge whether cancer patients need help managing their emotions or with other practical concerns. Patients who show moderate to severe distress are typically referred to appropriate resources, such as a clinical health psychologist, social worker, chaplain, or psychiatrist.

CONCLUSION

Studies have recommended that mental or behavioral variables may impact the occurrence or movement of disease through psychosocial effects on invulnerable capacity. In this regard, physiological pathways and instruments for bio-behavioral elements and tumor movement was evaluated (Lutgendorf et al. 2011). Furthermore, sub-atomic examination with telomerase action related telomere length with ecological and mental anxiety . A consequence of intrigue, be that as it may, was as of late distributed exhibiting that the impacts of identity attributes and discouragement on tumor hazard and survival give off an impression of being to a great degree as little as the information acquired from imminent companion ponders in populace based and clinical databases Nakaya 2014). In spite of this database result, the likelihood and wealth of proof demonstrating that mental mediations and social help may upgrade safe capacity and survival among malignancy patients obviously justifies assist investigation, especially for the treatment of growth related with stress and gloom.

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Corresponding Author

Kshama Vairagi*

Research Counseller at Tata Memorial Hospital, University-Pebble Hills University