Psychological and Behavioral Impacts of Breast Cancer on Survivors

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Abstract

More than 3.8 million people with a history of breast cancer were reported to be alive in 2019, and about 150,000 of these people are currently living with metastatic disease. Based on recent data, the survival rate for breast cancer survivors is 91% after 5 years, 84% after 10 years, and 80% after 15 years. The purpose of this research article is to review how breast cancer can influence patients’ mental health status while in remission and to emphasize the importance of survivorship resources for these patients after stopping intensive cancer treatment.

Mental health serves as a balance of emotional wellbeing and maintaining a harmonic internal equilibrium state. However, due to intensive therapies, treatments, and post-traumatic stress, a breast cancer survivor may have difficulties with being in a healthy mental state. The causes for depression, “chemo brain”, and mood changes will be discussed in relation to breast cancer treatment and survivorship.

Three resources that are crucial to helping a patient adjust to the multitude of emotions and the new “normal” in their lives have been identified: psychiatric oncologists, survivorship clinics, and personalized plans for recovery. The review article will explore the purpose and importance of each of these resources.

Introduction

The impact on mental health is among a myriad of post-treatment symptoms that cancer survivors face while in remission, especially in breast cancer patients. Mental health includes maintaining “a dynamic state of internal equilibrium which enables people to use their abilities in harmony with universal values of society” (Galderisi, et al., 2015). By managing this equilibrium, people are assessed for emotional and cognitive capabilities that allow for this harmony to remain intact. However, several psychosocial factors – which are biological or environmental influences that impact a person’s well-being – can be detrimental to a recovering breast cancer survivor.

Breast cancer is defined as unregulated cell division in the breast tissue. The most common types of breast cancer found are ductal carcinoma and lobular carcinoma; these cancers are found in 90% of breast cancer patients. Ductal carcinomas occur when cancer cells begin to proliferate in the lining of the milk duct, whereas lobular carcinomas are found in the lobules, or milk glands, of the breast. These cancers begin to turn invasive when the cancer cells begin to spread from their place of origin to surrounding normal tissue. (“Definition of Breast Cancer”, n.d.). Breast cancer remains as one of the most common cancers in the world among women. Overall, about 268,600 individuals are diagnosed with breast cancer each year, and approximately 42,000 individuals are expected to die from their breast cancer. This accounts for a survival rate of around 80-90%, however certain risk factors – such as age, progression and aggression of disease, and other environmental concerns – may impact an individual’s personal chance of survival. Nevertheless, more than 3.8 million people with a history of breast cancer were reported to be alive in 2019, and about 150,000 of these people are currently living with metastatic disease. Based on recent data, the survival rate for breast cancer survivors is 91% after 5 years, 84% after 10 years, and 80% after 15 years. (“Breast Cancer Facts and Figures”, 2020).

The survival rate for breast cancer is large, however, these survivors are still impacted by an affected mental health status after receiving biological treatment. The purpose of this research article is to review how breast cancer treatments can influence a survivor’s mental health status and to emphasize the importance of survivorship resources for these patients after stopping intensive cancer treatment.

Effects on Mental Health

Mental health serves as a balance of emotional wellbeing and maintaining a harmonic internal equilibrium state. However, due to intensive therapies, treatments, and post-traumatic stress, a breast cancer survivor may have difficulties with being in a healthy mental state. Common symptoms found in cancer survivors include fatigue, anxiety, depression, reduced cognitive functions, and mood changes. These symptoms often impact a cancer survivor’s mental wellbeing as he or she attempts to physically and emotionally recover from the biological treatment phase. In this portion of the review article, the causes for depression, “chemo brain”, and mood changes will be discussed in relation to breast cancer treatment and survivorship.

Depression

Depression is one of the most common symptoms found in breast cancer survivors. With the common diagnosis for depression being Major Depressive Disorder, it is imperative to grasp the meaning of this common mental illness and its role in medicine. “The diagnosis of major depressive disorder requires a distinct change of mood, characterized by sadness or irritability and accompanied by at least several psychophysiological changes...These changes must last a minimum of 2 weeks and interfere considerably with work and family relations” (Belmaker, 2008). There are many hypotheses as to why depression may occur in an individual – ranging
from biological predispositions to chemical deficiencies in the nervous system – however, a common factor that is present in breast cancer survivors is stress-induced anxiety or pain due to treatment or the realization of mortality. Overall, cancer treatments can induce depression in patients, however, there are specific therapies and attempted curative procedures for breast cancer patients that may further cause Major Depressive Disorder. These therapies and treatment procedures specific to breast cancer patients include endocrine therapy and surgeries such as mastectomies and lumpectomies.

Endocrine therapy, also known as hormone therapy, is a type of adjuvant treatment for breast cancer patients that inhibit certain hormones from attaching to their respective receptors. This treatment is useful for certain types of breast cancers that are affected by a hormone imbalance, such as cancers caused by the overexpression of gene HER2 or extensive peritumoral vascular invasion. Young, pre-menopausal women are often chosen to participate in endocrine therapy as a result of their negative prognostic role and differing response to systemic therapy when compared to older women. The hormones commonly targeted with endocrine therapy for breast cancer patients are estrogen and progesterone. Estrogen is a vital hormone for sexual and reproductive development in women, whereas progesterone is involved in the menstrual cycle, pregnancy, and embryogenesis of humans and their development. By lowering the expression of these hormones during endocrine therapy, these young women often face a suppression in ovarian function, which can be shown in early menopausal phases, or sexual dysfunctions. (Colleoni, Giobbie-Hurder, 2010). Since young women are impacted by this therapy, depression can occur frequently after receiving this type of treatment. Since hormone levels are impacted by the endocrine therapy, the chances of potentially conceiving a fetus or maintaining a sex drive will be difficult. In a study completed at University of California, Los Angeles Oncology Clinic and the University of Arizona Cancer Center, the depressive symptoms were measured for patients receiving multiple treatments, including endocrine therapy. After 9 months of receiving endocrine treatment, patients were found to have negative emotional expressions in conjunction with depression symptoms (Merroquín, et al., 2016). Endocrine therapy can induce a state of depression in survivors through a series of inhibiting important hormones that are necessary for sexual and reproductive development.

In addition to endocrine therapy, surgery can also cause depression in breast cancer survivors. Surgery is often completed for breast cancer patients in order to remove as much of the cancer as possible, determine whether the cancer has metastasized to the nearby lymph nodes, or to alleviate pain symptoms associated with the breast cancer. There are two basic types of surgery to remove breast cancer: lumpectomies and mastectomies. Lumpectomies occur when the cancer is localized, so only a portion of the breast containing the cancer is removed. Mastectomies occur when the entire breast, including all of the breast tissue and surrounding tissue, is removed. Mastectomies are used to ensure that the entire cancer is eradicated from the body, as well as depleting chances of metastasis by removing some of the surrounding normal tissue. These surgeries may be considered lifesaving, as they remove the cancer from the patient, however, breast cancer survivors have shown signs of depression after receiving drastic surgeries such as lumpectomies and mastectomies. In a study completed at the University of Miami Miller School of Medicine, 231 non-metastatic breast cancer survivors who had received surgical treatment were evaluated for depression at an 11-year follow up appointment. A total of 95 women, or about 41.1% of the interviewed breast cancer survivors, showed mild to moderate depression symptoms. Similar results were also observed in a subsample of invasive breast cancer survivors. (Antoni, et al., 2016). Depressive symptoms were evaluated in relation to surgical treatment in breast survivors, even on a long-term basis.

Mood Changes
In addition to depression, cancer survivors can also experience mood changes related to their therapy. A noted example of where breast cancer survivors specifically can experience changes in mood due to differing hormone levels over time is when they receive endocrine therapy. "Hormones are chemicals the body naturally makes to control the growth and activity of normal cells. Hormones can also speed the growth of some types of cancer. For example, the hormones estrogen and progesterone can stimulate the growth of some breast tumors” (Levy, n.d.). Endocrine therapy functions by blocking hormone receptors to inhibit cancer cell growth. Due to the sudden change in hormone activity in the body, endocrine therapy can cause fatigue and mood swings. “Nervousness, depression, and anxiety are some of the symptoms that women may have. It is natural to have strong emotions in response to a diagnosis of breast cancer. These may become stronger when a woman gets hormonal therapy” (Levy, n.d.).

Other post-intensive treatment medication can also impact mood changes. Chemo modulatory medication can also cause hormone imbalances. “People whose breast cancers produce high levels of the protein human epidermal growth factor receptor 2 (HER2) can benefit from treatments that target this protein. These kinds of cancers are called HER2-positive breast cancers and are typically treated with a HER2-directed agent plus chemotherapy, particularly if they are also hormone receptor negative” (Hayes, 2020). These medications targeted towards hormone receptor negative also have mood changes listed as a side effect. Rapid and intense mood changes can impact a patient’s mental health due to increased changes that are often uncontrollable, leading to frustration. Prolonged mood changes can be a sign of depression and anxiety disorders.

Chemo Brain
Chemotherapy-caused central nervous system side effects are commonly referred to as “chemo brain” or “chemo fog” (Kovalchuk, Kolb, 2017). There has been evidence that certain cancer therapies, such as chemotherapy, can have detrimental effects to the central nervous system of a patient due to the high levels of toxicity used on the cancer cells. In animal studies, chemotherapeutic substances are shown to have damaged neural precursor cells and white matter tracts. The degradation of these central nervous system structures are related to deficits in learning and memory functions. Similar results have been observed in human studies. By utilizing structural imaging technology, it has been shown that chemotherapy can negatively impact gray and white matter volume and white matter microstructure. Additionally, functional studies using event-related potential through electroencephalograms and hemodynamic imaging have demonstrated that chemotherapy can also alter a patient’s activation patterns of cortical networks involved in higher brain function. (Kaiser, 2014). These alterations can lead to a decrease in cognitive function in multiple settings.

Chemo brain can decrease cognitive functions. For example, a survivor impacted by chemo brain may take longer to recall memories or necessary information. In addition, a survivor’s multitasking abilities and endurance for cognitive and physical abilities may be negatively impacted. Decreases in cognitive function in cancer patients are linked to later developed symptoms of depression. "Extensive research over the past decade has identified how chemotherapy targets brain structure and function as an unwanted side effect of cancer therapy. Those efforts have also started to shed light on the mechanisms that enhance brain regeneration and expedite recovery from brain injury, previously thought to be impossible” (Dietrich, 2019). Through practices such as exercise, sufficient restorative sleep, good nutrition, and engaging in positive and stress-reducing activities, a patient with chemo brain has the potential to restore cognitive functions. In addition, medications such as neurostimulants and anti-aging drugs can be used in addition to different lifestyle measures to aid in cognitive restoration.
Resources to Restore a Healthy Mental State

In order to start on the path to restoring a healthy mental state for a breast cancer survivor, it is important to utilize the available survivorship resources that are offered to them. Their bodies, cognitive functions, and mental state are far different than what they were before their cancer diagnosis, so these patients must manage stress, frustration, sadness, anger, and more throughout their life. Three resources that are crucial to helping a patient adjust to the multitude of emotions and the new “normal” in their lives have been identified: psychiatric oncologists, survivorship clinics, and personalized plans for recovery. This portion of the review article will explore the purpose and importance of each of these resources.

Psychiatric Oncologists

Psychiatric oncology, as a field, is on an upwards trend in popularity and importance factor. This field is the study of psychiatric and psychosocial components of cancer, which can pertain to the development, course, or outcome of the cancer. This allows for a relation to caring for the common psychological and emotional problems encountered in current cancer patients and survivors as well as their formal caregivers, family members, and friends. (Chaturvedi, 2012). Psychiatric oncologists can also provide personalized plans to recover mentally and emotionally – including nutrition and exercise plans – and resources to help recall information and details about a patients’ path to recovery, such as survivorship clinics.

Survivorship Clinics

Survivorship clinics are another vital resource for assisting in a cancer survivor’s road to recovering a healthy mental status. These clinics aid in organizing appointments, medicines, treatments, and more for survivors in order to alleviate stress and risk. (Economou, Corcoran, 2016). In addition, survivorship clinics can also record all the information a patient needs in a journal; this information can range from facts about their type of cancer to plans on how to keep the cancer under control. By keeping these important details in one spot, survivorship clinics minimize active cognitive recall, which can be affected by symptoms of treatments, such as chemo brain. With this minimization, survivors are under less stress, which can aid in obtaining a healthy mental status. In addition to organizing this crucial information, survivorship clinics can also provide necessary resources that patients may not know of at the time to help them recover after a traumatic experience. Examples of these resources that can aid in recovery are support groups, exercise regimens to improve range of motion, dietary plans for supple nutrition, and websites that aid in career networks and caregiver support.

Personalized Plans for Recovery

Personalized plans for recovery are often created by psychiatric oncologists for cancer survivors in order to create a mental health rehabilitation phase that has the most optimal chance of success. These personalized plans can include but are not limited to nutrition plans, exercise regimens, antidepressants or anti-anxiety medication, restorative sleep monitoring, support groups, and survivorship clinic appointments. When forming a personalized plan for a patient, the psychiatric oncologist has to keep many factors in mind. One of the most important keys for this recovery path to succeed is the motivation component. Through individual meetings with the survivor, the psychiatric oncologist can identify what motivates their patient to fight against their disease and mentally recuperate in order to keep their patient on the right road to recovery. Other components, such as age, lifestyle, career, and more are taken into account when creating the personalized plan for recovery for a survivor.

Conclusion

Breast cancer is a collection of diseases that take a major toll on its hosts. Even though breast cancer has a high survival rate, millions of people have been affected by this disease in more ways than just the physical component. Specifically, breast cancer has impacted its survivors’ mental health. The psychological impact of breast cancer on its survivors has been demonstrated through mental health impacts such as changes in mood, depression, and cognitive abilities, such as through chemo brain. These mental changes are often a result of the physical intensive cancer treatments – including surgery, chemotherapy, and endocrine therapy – used to remove or alleviate the cancer from a patient’s body.

Breast cancer survivors must combat these mental health impacts even after they have ended their physical battle with their cancer. By searching after survivorship resources, such as psychiatric oncologists, survivorship clinics, and personalized plans developed for mental health recovery, these patients can start on a path to rehabilitation towards a healthier mental state. By acknowledging the traumatic experience they underwent and adjusting expectations to realistic measures, patients can alleviate the mental burden they hold when recovering both physically and mentally from breast cancer.

Bibliography

