



# Global Year Against Cancer Pain

OCTOBER 2008 – OCTOBER 2009

## Breast Cancer and Pain

Breast cancer is a leading cancer diagnosis among women worldwide, with more than 1 million new cases per year, leading to approximately 500,000 deaths [1]. Traditionally a malignancy seen primarily in the Western world, it is becoming increasingly prevalent in developing countries. The World Health Organization estimates that by 2020, 70% of new cases of breast cancer will be seen in developing countries [12]. Factors associated with this increase include longer lifespan, a high-fat diet and obesity, lack of exercise, genetics, and reproductive changes (e.g., early menarche, nulliparity or low parity, late age at first childbirth, and late menopause) [2,6]. Pain can be a significant factor during the course of breast cancer and is typically related to the disease or its treatment.

### Diagnosis and Treatment of Breast Cancer

Diagnosis of breast cancer may be delayed by lack of access to or inability to pay for diagnostic procedures such as mammograms. This is a global health problem because the prognosis is heavily dependent on the stage of disease at presentation. For example, 5-year survival after discovery of localized disease is 97%, but after presentation with metastatic disease it is only approximately 25%.

The treatment of breast cancer may involve surgery (including lumpectomy or mastectomy, usually with axillary node biopsy or dissection), radiotherapy (external-beam or interstitial implants), chemotherapy, adjuvant hormonal therapy (e.g., tamoxifen or an aromatase inhibitor in hormone-dependent breast cancer), and in some women, trastuzumab, a monoclonal antibody that acts on the HER2/neu (erbB2) receptor [10,11].

### Pain Related to Breast Cancer Treatment

#### *Surgery and Invasive Procedures*

Biopsies conducted in the early phase of diagnosis can produce acute pain, as can surgical procedures such as lumpectomy or modified radical mastectomy [9]. Axillary node dissection, now less invasive than in the past with the advent of sentinel node biopsy, can lead to acute pain, and for some, persistent pain. In a systematic review of pain after breast cancer surgery, pain in the breast or axilla ranged from 12% to 51%, with significant reduction in range of motion and in hand grip strength [8]. Notably, 25% of patients in these studies reported phantom sensations. In a prospective study of women undergoing surgery for breast cancer, at 6 months most patients reported tightness in the breast and axillary incisions, along with axillary edema [4]. This edema persisted for 12 months. In a prospective study designed to identify risk factors predictive of the development of chronic pain after breast cancer surgery, younger age, more invasive surgery, postoperative radiation therapy, and clinically meaningful postoperative pain were found to be predictive [7]. In contrast to earlier studies [5], emotional factors were not associated with chronic pain in this trial.

#### *Radiation Therapy*

During the acute treatment period, radiotherapy can cause painful skin reactions, ranging from mild erythema in the treatment area in the chest and axilla, similar to sunburn, to significant moist desquamation. Long-term reactions, such as cervical or brachial plexopathies, have been reported.

#### *Chemotherapy*

Breast cancer is treated with a wide variety of chemotherapeutic agents, most commonly including anthracyclines (e.g., doxorubicin), alkylating agents (e.g., cyclophosphamide), and taxanes (paclitaxel, docetaxel). Anthracyclines and alkylating agents can cause mucositis or painful mouth sores. Acute paclitaxel syndrome, consisting of arthralgias and myalgias, can be mild to debilitating, beginning shortly after infusion and lasting several days. Painful peripheral neuropathy is a known adverse effect that can occur in up to 60% of people receiving taxanes. Although resolution of chemotherapy-induced painful peripheral neuropathy occurs in most individuals, some continue to have persistent pain.

### *Hormonal Therapy*

Tamoxifen has been known to cause bone pain, although this syndrome has not been well characterized. Aromatase inhibitors also lead to significant arthralgias and myalgias.

### **Pain from Tumor**

Breast cancer can result in pain at the site of the primary tumor, particularly when the tumor invades the local skin. The most common sites of metastatic spread of breast cancer are the bones, lungs, and liver. Approximately 25% of breast cancers spread to the bones first; the spine, ribs, pelvis, and long bones are most commonly affected. Patients may experience direct pain at the site of metastases that is characterized as dull and constant. The intensity may worsen during standing, activity, or palpation of the affected area. Pathological fractures or vertebral collapse can lead to sudden onset of intense pain.

Metastases to the lungs can produce a dry cough that will exacerbate preexisting bone pain. Liver involvement can lead to visceral pain, including right upper-quadrant abdominal pain that is frequently referred to the right shoulder. Spread of cancer to the central nervous system can lead to headache or pain in the distribution of a cranial nerve.

### **Pain Management**

Assessment of pain is critical, as is determination of the underlying etiology, which will dictate the appropriate interventions to be used. Standard analgesic therapies, such as nonsteroidal anti-inflammatory drugs, opioids, and adjuvant agents are essential. One study found that tricyclic antidepressants are particularly useful in treating postmastectomy neuropathy [3]. Radiotherapy can be extremely beneficial for bone metastases from breast cancer. Radiotherapy to metastatic bone lesions can be given over several weeks or in a single fraction. Relief may begin within days of treatment, and the maximum effect may occur several weeks after treatment is completed. Adverse effects are generally limited, depending on the treatment area. In some cases of widely metastatic bone disease, radiopharmaceuticals such as strontium-89 or samarium-153 may be used. Bisphosphonates, including pamidronate and zoledronate, have shown benefit in relieving pain from bone metastases, as well as preventing future skeletal events such as fractures. Splinting and immobilization can be less invasive approaches, yet surgical stabilization should be considered in appropriate patients. Vertebroplasty may be a good minimally invasive option when metastasis occurs in the vertebral bodies, leading to collapse and resultant compression of nerve roots. Physiotherapy can be essential for maintenance of range of motion and for prevention and treatment of lymphedema. Interventional therapies, including nerve blocks, can be useful in selected individuals with pain due to breast cancer. Palliative care, with attention to pain and other symptoms, is appropriate from diagnosis throughout the course of this disease.

### **References**

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