

Paget Disease of the Nipple

Key Points

- Paget disease of the nipple is an uncommon type of cancer that forms in or around the nipple (see Question 1).
- Paget disease of the nipple is almost always associated with an underlying breast cancer (see Questions 1 and 2).
- Scientists do not know exactly what causes Paget disease of the nipple, but two major theories have been suggested for how it develops (see Question 2).
- Symptoms of early-stage disease may include redness or crusting of the nipple skin; symptoms of more advanced disease often include tingling, itching, increased sensitivity, burning, or pain in the nipple (see Question 3).
- Paget disease of the nipple is diagnosed by performing a biopsy (see Question 4).
- Surgery is the usual treatment for Paget disease of the nipple. Additional treatments may be recommended under certain circumstances (see Question 5).
- Many clinical trials for breast cancer are under way (see Question 6).

1. What is Paget disease of the nipple?

Paget disease of the nipple, also called Paget disease of the breast, is an uncommon type of cancer that forms in or around the nipple (1, 2, 3). More than 95 percent of people with Paget disease of the nipple also have underlying breast cancer; however, Paget disease of the nipple accounts for less than 5 percent of all breast cancers (1). For instance, of the 211,240 new cases of breast cancer projected to be diagnosed in 2005, fewer than 11,000 will also involve Paget disease of the nipple (4).

Most patients diagnosed with Paget disease of the nipple are over age 50, but rare cases have been diagnosed in patients in their 20s (1). The average age at diagnosis is 62 for women and 69 for men. The disease is rare among both women and men.

Paget disease of the nipple was named after Sir James Paget, a scientist who noted an association between changes in the appearance of the nipple and underlying breast cancer (1, 5). There are several other unrelated diseases named after Paget, including Paget disease of the bone and Paget disease of the vulva; this fact sheet discusses only Paget disease of the nipple.

2. What are the possible causes of Paget disease of the nipple?

Scientists do not know exactly what causes Paget disease of the nipple, but two major theories have been suggested for how it develops (1, 2). One theory proposes that cancer cells, called Paget cells, break off from a tumor inside the breast and move through the milk ducts to the surface of the nipple, resulting in Paget disease of the nipple. This theory is supported by the fact that more than 97 percent of patients with Paget disease also have underlying invasive breast cancer or ductal carcinoma in situ (DCIS) (1). DCIS, also called intraductal carcinoma, is a condition in which abnormal cells are present only in the lining of the milk ducts in the breast, and have not invaded surrounding tissue or spread to the lymph nodes. DCIS sometimes becomes invasive breast cancer. Invasive breast cancer is cancer that has spread outside the duct into the breast tissue, and possibly into the lymph nodes under the arm or into other parts of the body.



X 6 0 3 9

The other theory suggests that skin cells of the nipple spontaneously become Paget cells. This theory is supported by the rare cases of Paget disease in which there is no underlying breast cancer, and the cases in which the underlying breast cancer is found to be a separate tumor from the Paget disease (1).

3. What are the symptoms of Paget disease of the nipple?

Symptoms of early Paget disease of the nipple include redness and mild scaling and flaking of the nipple skin (1). Early symptoms may cause only mild irritation and may not be enough to prompt a visit to the doctor (3). Improvement in the skin can occur spontaneously, but this should not be taken as a sign that the disease has disappeared. More advanced disease may show more serious destruction of the skin (1). At this stage, the symptoms may include tingling, itching, increased sensitivity, burning, and pain. There may also be discharge from the nipple, and the nipple can appear flattened against the breast (1, 2).

In approximately half of patients with Paget disease of the nipple, a lump or mass in the breast can be felt during physical examination (1). In most cases, Paget disease of the nipple is initially confined to the nipple, later spreading to the areola or other regions of the breast (1, 2). The areola is the circular area of darker skin that surrounds the nipple. Paget disease of the nipple can also be found only on the areola, where it may resemble eczema, a noncancerous itchy red rash (1). Although rare, Paget disease of the nipple can occur in both breasts (2).

4. How is Paget disease of the nipple diagnosed?

If a health care provider suspects Paget disease of the nipple, a biopsy of the nipple skin is performed (1, 2, 3). In a biopsy, the doctor removes a small sample of tissue. A pathologist examines the tissue under a microscope to see if Paget cells are present. The pathologist may use a technique called immunohistochemistry (staining tissues to identify specific cells) to differentiate Paget cells from other cell types (1). A sample of nipple discharge may also be examined under a microscope for the presence of Paget cells (3).

Because most people with Paget disease of the nipple also have underlying breast cancer, physical examination and mammography (x-ray of the breast) are used to make a complete diagnosis.

5. How is Paget disease of the nipple treated?

Surgery is the most common treatment for Paget disease of the nipple (1, 2, 5). The specific treatment often depends on the characteristics of the underlying breast cancer.

A modified radical mastectomy may be recommended when invasive cancer or extensive DCIS has been diagnosed (5). In this operation, the surgeon removes the breast, the lining over the chest muscles, and some of the lymph nodes under the arm. In cases where underlying breast cancer is not invasive, the surgeon may perform a simple mastectomy to remove only the breast and the lining over the chest muscles (2, 5).

Alternatively, patients whose disease is confined to the nipple and the surrounding area may undergo breast-conserving surgery or lumpectomy followed by radiation therapy (1, 2, 5). During breast-conserving surgery, the surgeon removes the nipple, areola, and the entire portion of the breast believed to contain the cancer. In most cases, radiation therapy is also used to help prevent recurrence (return of the cancer).

During surgery, particularly modified radical mastectomy, the doctor may perform an axillary node dissection to remove the lymph nodes under the arm (1, 5). The lymph nodes are then examined to see if the cancer has spread to them. In some cases, a sentinel lymph node biopsy may be performed to remove only one or a few lymph nodes. (For more information about sentinel lymph node biopsies, please see National Cancer Institute Fact Sheet 7.44, *Sentinel Lymph Node Biopsy: Questions and Answers*, at <http://www.cancer.gov/cancertopics/factsheet/Therapy/sentinel-node-biopsy> on the Internet.)

Adjuvant treatment (treatment that is given in addition to surgery to prevent the cancer from coming back) may be part of the treatment plan, depending on the type of cancer and whether cancer cells have spread to the lymph nodes. Radiation treatment is a common adjuvant therapy for Paget disease of the nipple following breast-conserving surgery. Adjuvant treatment with anticancer drugs or hormone therapies may also be recommended, depending on the extent of the disease and prognostic factors (estimated chance of recovery from the disease or chance that the disease will recur).

6. Are clinical trials (research studies) available? Where can people get more information about clinical trials?

Yes. NCI is currently sponsoring many clinical trials for all types of breast cancer. These studies are designed to find new treatments and better ways to use current treatments. As new and improved treatments are found for breast cancer, the treatment options for Paget disease of the nipple will also improve (2, 5).

People interested in taking part in a clinical trial should talk with their doctor. Information about clinical trials is available from NCI's Cancer Information Service (CIS) (see below) at 1-800-4-CANCER and in the NCI booklet *Taking Part in Cancer Treatment Research Studies*, which can be found at <http://www.cancer.gov/publications> on the Internet. This booklet describes how research studies are carried out and explains their possible benefits and risks. Further information about clinical trials is available at <http://www.cancer.gov/clinicaltrials> on NCI's Web site. The Web site offers detailed information about specific ongoing studies by linking to PDQ®, NCI's comprehensive cancer information database. The CIS also provides information from PDQ.

Selected References

1. Kaelin CM. Paget's Disease. In: Harris JR, Lippman ME, Morrow M, Osborne CK, editors. *Diseases of the Breast*. 3rd ed. Philadelphia: Lippincott Williams and Wilkins, 2004.
2. DeVita VT Jr., Hellman S, Rosenberg SA, editors. *Cancer: Principles and Practice of Oncology*. 7th ed. Philadelphia: Lippincott Williams and Wilkins, 2004.
3. Beers MH, Berkow R, editors. *The Merck Manual of Diagnosis and Therapy*. 17th ed. Whitehouse Station, NJ: Merck & Company, Inc., 1999.
4. American Cancer Society (2005). *Cancer Facts and Figures 2005*. Atlanta, GA: American Cancer Society. Retrieved April 20, 2005, from <http://www.cancer.org/acs/groups/content/@nho/documents/document/caff2005f4pwsecuredpdf.pdf>.
5. Marcus E. The management of Paget's disease of the breast. *Current Treatment Options in Oncology* 2004; 5:153-160.

#

Related NCI materials and Web pages:

- National Cancer Institute Fact Sheet 2.11, *Cancer Clinical Trials* (<http://www.cancer.gov/cancertopics/factsheet/Information/clinical-trials>)
- National Cancer Institute Fact Sheet 7.1, *Radiation Therapy for Cancer* (<http://www.cancer.gov/cancertopics/factsheet/Therapy/radiation>)
- National Cancer Institute Fact Sheet 7.20, *Adjuvant and Neoadjuvant Therapy for Breast Cancer* (<http://www.cancer.gov/cancertopics/factsheet/Therapy/adjuvant-breast>)
- *Understanding Breast Changes: A Health Guide for Women* (<http://www.cancer.gov/cancertopics/understanding-breast-changes>)
- *What You Need To Know About™ Breast Cancer* (<http://www.cancer.gov/cancertopics/wyntk/breast>)

How can we help?

We offer comprehensive research-based information for patients and their families, health professionals, cancer researchers, advocates, and the public.

- **Call** NCI's Cancer Information Service at 1-800-4-CANCER (1-800-422-6237)
- **Visit** us at <http://www.cancer.gov> or <http://www.cancer.gov/espanol>
- **Chat** using LiveHelp, NCI's instant messaging service, at <http://www.cancer.gov/livehelp>
- **E-mail** us at cancergovstaff@mail.nih.gov

- **Order** publications at <http://www.cancer.gov/publications> or by calling 1-800-4-CANCER
- **Get help** with quitting smoking at 1-877-44U-QUIT (1-877-448-7848)

This fact sheet was reviewed on 6/27/05