



Ovarian cancer is a cancerous growth arising from the ovary. Symptoms are frequently very subtle early on and may include: bloating, pelvic pain, difficulty eating and urinary frequency, and are easily confused with other illnesses.

Ovarian cancer is the second most common gynecologic cancer, It caused nearly 14,000 deaths in 2010 alone. During that time, the overall five-year survival rate for all other cancers improved significantly: 68% for the general population diagnosed in 2001, up from 50% in the 1970s. Ovarian cancers have a much poorer survival rate, a 47% survival rate, up from 38% in the late 1970s.

Most (more than 90%) ovarian cancers are classified as "epithelial" and are believed to arise from the surface (epithelium) of the ovary. However, some evidence suggests that the fallopian tube could also be the source of some ovarian cancers. Since the ovaries and tubes are closely related to each other, it is thought that these fallopian cancer cells can mimic ovarian cancer. Other types may arise from the egg cells (germ cell tumor) or supporting cells. These cancers are grouped into the category of gynecologic cancer. In the United States each year 82,000 women are diagnosed with gynecologic cancer.

## Signs and symptoms

Signs and symptoms of ovarian cancer are frequently absent early on and when they exist they may be subtle. In most cases, the symptoms persist for several months before being recognized and diagnosed. Most women with ovarian cancer report one or more symptoms such as abdominal pain or discomfort, an abdominal mass, bloating, back pain, urinary urgency, constipation, tiredness and a range of other non-specific symptoms, as well as more specific symptoms such as pelvic pain, abnormal vaginal bleeding or involuntary weight loss. There can be a build-up of fluid (ascites) in the abdominal cavity.

A prospective case-control study of 1,709 women visiting primary care clinics found that the combination of bloating, increased abdominal size, and urinary symptoms was found in 43% of those with ovarian cancer but in only 8% of those presenting to primary care clinics.<sup>[10]</sup> Two case-control studies, (both subject to results being inflated by spectrum bias), have been reported. The first found that women with ovarian cancer had symptoms of increased abdominal size, bloating, urge to pass urine and pelvic pain. The smaller, second study found that women with ovarian cancer had pelvic/abdominal pain, increased abdominal size/bloating, and difficulty eating/feeling full. The second study produced a list of symptoms that was considered critical if any of the six (6) symptoms "occurred more than 12 times per month but were present for under 1 year".

## Cause

In most cases, the exact cause of ovarian cancer remains unknown. The risk of developing ovarian cancer appears to be affected by several factors.<sup>[13]</sup> Older women, and in those who have a first or second degree relative with the disease, have an increased risk. Hereditary forms of ovarian cancer can be caused by mutations in specific genes (most notably BRCA1 and BRCA2, but also in genes for hereditary nonpolyposis colorectal cancer). Infertile women and those with a condition called endometriosis, those who have never been pregnant and those who use postmenopausal estrogen replacement therapy are at increased risk. Use of combined oral contraceptive pills is a protective factor. The more children a woman has, the lower her risk of ovarian cancer. Early age at first pregnancy, older age of final pregnancy and the use of low dose hormonal contraception have also been shown to have a protective effect. Use of combined oral contraceptive pills is a protective factor. The risk is also lower in

women who have had their fallopian tubes blocked surgically (tubal ligation). Ovarian cancer is reduced in women after tubal ligation.

There is good evidence that in some women genetic factors are important. Carriers of certain BRCA mutations are notably at risk. The BRCA1 and BRCA2 genes account for 5%–13% of ovarian cancers and certain populations (e.g. Ashkenazi Jewish women) are at a higher risk of both breast cancer and ovarian cancer, often at an earlier age than the general population. Patients with a personal history of breast cancer or a family history of breast and/or ovarian cancer, especially if diagnosed at a young age, may have an elevated risk, and should be tested for the "cancer gene".

In the United States, 10 to 20 percent of patients with breast cancer and patients with ovarian cancer have a first- or second-degree relative with one of these diseases. Mutations in either of two major susceptibility genes, breast cancer susceptibility gene 1 (BRCA1) and breast cancer susceptibility gene 2 (BRCA2), confer a lifetime risk of breast cancer of between 60 and 85 percent and a lifetime risk of ovarian cancer of between 15 and 40 percent. However, mutations in these genes account for only 2 to 3 percent of all breast cancers.

A strong family history of uterine cancer, colon cancer, or other gastrointestinal cancers may indicate the presence of a syndrome known as hereditary nonpolyposis colorectal cancer (HNPCC, also known as Lynch syndrome), which confers a higher risk for developing ovarian cancer. Patients with strong genetic risk for ovarian cancer may consider the use of prophylactic, i.e. preventative, oophorectomy the surgical removal of both ovaries, after completion of childbearing years. Prophylactic oophorectomy significantly reduces the chances of developing both breast cancer and ovarian cancer if you're at high risk. Women with BRCA gene mutations usually also have their fallopian tubes removed at the same time (salpingo-oophorectomy), since they also have an increased risk of fallopian tube cancer.

A study found that Hereditary breast-ovarian cancer syndromes (HBOC) produce higher than normal levels of breast cancer and **ovarian cancer** in genetically related families (either one individual suffered from both, or several individuals in the families suffered from one or the other disease). The hereditary factors may be proven or suspected to cause the pattern of breast and ovarian cancer occurrences in the family.