



OVARIAN CANCER: SCENARIO OF ALLOPATHIC AND AYURVEDIC MEDICATION TREATMENTS

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ABSTRACT:

The ovarian cancer is the most common leading cause of death among women cancers. Ovarian cancer is the uncontrolled growth of cells in uterus, ovaries, fallopian tubes etc. which spread and cause metastasis. The knowledge about the ovarian cancer, it's signs and symptoms, diagnosis, stages, types and treatment may help wide range of patients about what to do and what not to do in this situation. There are various allopathic treatments like chemotherapy, surgery, radiation therapy, targeted therapy and immunotherapy as well as hormone therapy to treat ovarian cancer but no treatment of these gives complete cure of disease also allopathic medicines have lots of side effects. To tackle these side effects patient must go for alternative or complementary treatment like Ayurveda. In Ayurvedic system various herbs having anticancer activity, yoga, relaxation techniques acupuncture are the way of treatment. Ayurvedic treatment has advantage over allopathic treatment as it do not cause any side effects also have cytotoxic effects on cancer cells. It also stops cancer prognosis. All the current treatments both allopathic and Ayurvedic medication treatments their advantages, side effects have impact on not only patients suffering from the disease but also on the research process which can lead a change and improve quality of life.

KEYWORDS: Ovarian cancer, allopathic treatments, Ayurvedic treatments, advantages, side effects.

INTRODUCTION:

OVARIAN CANCER:

Ovarian cancer is the uncontrolled growth of abnormal cells that present in ovaries or fallopian tubes. When these abnormal cells spread from their origin to other parts it forms tumor malignancy. ^[1,2,3] Women's have

2 ovaries. The oval shaped reproductive organ which produces eggs that travel from ovaries through fallopian tubes into the uterus. [3]



Figure 1: A typical diagram of ovarian cancer [35]

Types of tumor:

1. Noncancerous: This is also known as benign tumors. These cancers do not spread to other tissues.
2. Cancerous: These are known as malignant tumours. These tumours are invasive and likely to spread.
3. Borderline : These tumours may spread but with low potential than malignant tumours. Signs and symptoms [3]

In early stages ovarian cancer do not show noticeable symptoms but later stages of ovarian cancer shows symptoms which may include –

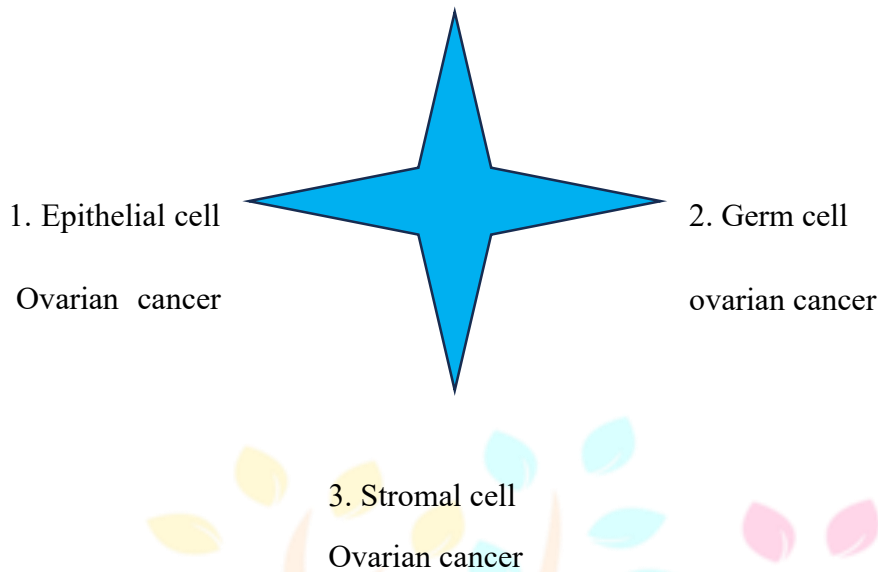
- Abnormal bloating or swelling
- Quickly feeling full when eating
- Discomfort in pelvic area
- Fatigue
- Back pain
- Changes in bowel habits
- Constipation
- Frequent need to urinate
- Menstrual irregularities
- Unexpected weight loss or weight gain
- Tiredness
- Pain during intercourse [5, 4]

Risk factors of ovarian cancer:

- Women's with Lynch syndrome had higher risk of ovarian cancer.
- Ovarian cancer can also be hereditary. If person have a strong family history of ovarian or breast cancer such person have mutations that affect the BRCA1 or BRCA2 genes.
- Women's over the age of 50 have higher risk for ovarian cancer than younger , below 12 years girls may also affect.

- Women's that have not children and or first child after the age of 35 years .
- Use of estrogen as hormone replacement therapy or for fertility treatment^[3,4]

Types of ovarian cancer^[6]



1. Epithelial cell ovarian cancer

- It is the most common among the other types of ovarian cancer and second common cause of death among women cancers. As 75 % cases remains undiagnosed till advanced stage.^[15]
- Treatment for this type of ovarian cancer is chemotherapy, surgery, new approaches like cytoreduction, adjuvant chemotherapy and targeted drug therapy. It occur mainly in post-menopausal women's.^[15]
- The cancer forms in outer surface of ovaries, fallopian tubes as well as in peritoneous. Around 85 %to 90 % of tumours are classified as epithelial.^[16]
- Types of epithelial ovarian cancer
 - 1 Serous
 - 2 Mucinous
 - 3 Clear cell
 - 4 Endometriod^[16]

2. Germ cell ovarian cancer

- Germ cells are those cells which forms eggs these eggs then released at the time of ovulation. This type is most rare. About 5 % of the ovarian cancers are of germ cell ovarian cancer types.^[18]
- Around 80% cases are found in women's less than 30 years of age. Treatment is also successful in around 90% of women's with germ cell tumours and fertility also gets preserved.^[16]
- Most germ cell tumours in ovaries are benign rarely it may be malignant. Also most of times tumor grows in one ovary.^[18]

Types of germ cell ovarian cancer

1. Dysgerminoma
2. Mature teratoma
3. Immature ovarian teratoma
4. Endometrial sinus tumours^[18]

3. Stromal cell ovarian cancer

- Stromal cell ovarian cancer grows out of the ovary's connective tissues. Some also comes from the cells of ovaries that makes estrogen and progesterone hormones.
- These cancers mostly affects older women but some may affect children.
- Among all stromal cell cancers 70% are diagnosed still stage 1 of the so treated by using surgery and chemotherapy.

Types of stromal cells ovarian cancer

1. Fibromas (benign)
2. Thecomas (benign)
3. Granulosa cell tumours (malignant)
4. Sertoli or leading cell tumours (malignant)^[16]

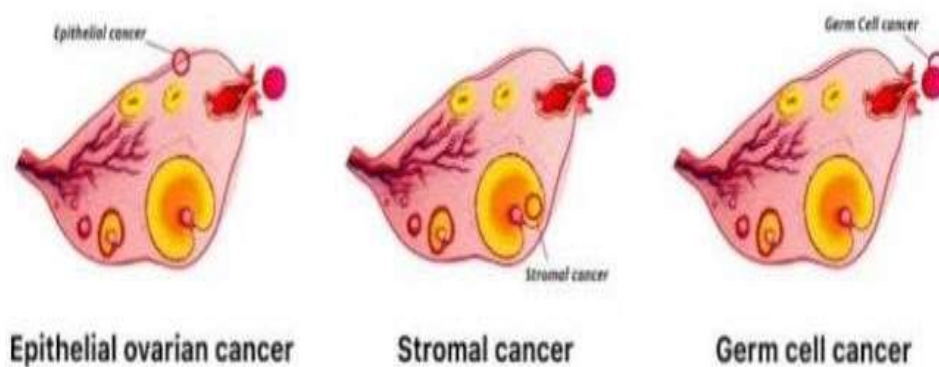


Figure 2: Types of ovarian cancer^[36]

STAGES OF OVARIAN CANCER:

Ovarian cancer stage is indication of cancer spread in particular patients. Lower or lesser is the of stage lesser is the cancer spread.

- Stage1- In this stage cancer is in ovaries. It had not spread to other body parts. First treatment for ovarian cancer is surgery. In this uterus, both ovaries and fallopian tubes are removed further treatment will depend on cancer status. If the cancer is of low grade, the patient can keep 1 ovary and 1 fallopian tubes if patient wants to have children. It is divided into stage1a, stage1b and stage1c.
- Stage2- In this stage cancer spread from ovaries to pelvis but is don't go for other body parts or lymph nodes nearby. In stage2a cancer spread to fallopian tubes. In stage2b cancer spread to nearby pelvis organs. Surgers and debulking , hysterectomy, chemotherapy these treatment are done.
- Stage3- In this stage cancer spread to other parts of abdomen, lymph nodes, sometimes both. It is not spread to more distant sites in the body. It has stage3a, stage3b, stage3c.
It is treated as like stage 2 but with more cycles of chemotherapy and additional treatments.
- Stage4- In this cancer spreads other sites than abdomen and may be in the lymph node. Treatment for this cancer is shrinked and then surgery is done. Combination of targeted therapy with immunotherapy may also be suggested in some cases. [19]

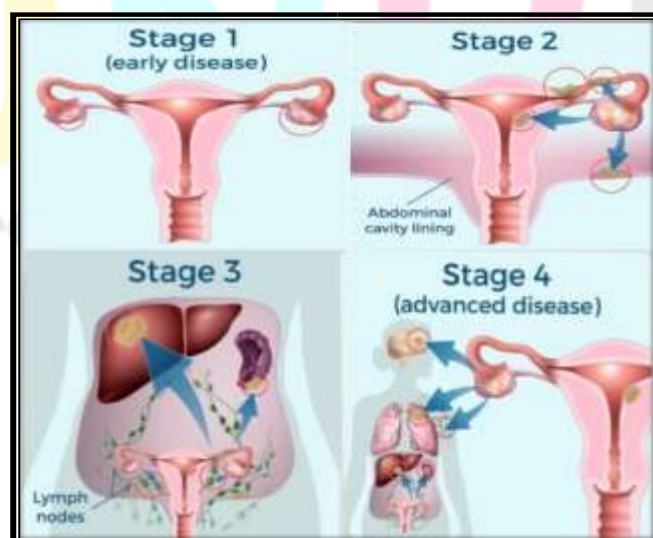


Figure 3: Stages of ovarian cancer^[37]

Diagnosis Cancer is diagnosed by various methods there is no specific treatment for diagnosis of cancer.^[20]

Physical examination and medical history: Pelvic exam by physician is done to check enlarged ovary or signs of fluid in abdomen. Family history of the is also checked as risk factors.

Ultrasound: It uses sound waves to display cancer image on skin. It is used to find tumours or fluids filled cyst and look the size of ovary.

CT scan: Computed tomography is an x- ray test that makes detailed cross sectional image of the body. It is used to detect cancer malignancy.

Colonoscopy: It is used to examine colons (large intestine) a small video camera is inserted through anus to click images and video of colon. It is used to check cancer prognosis.

Magnetic imaging technique: It uses strong magnets to take cross sectional images. It is rarely used in ovarian cancer.

Biopsy: It is process of taking small piece of cells from certain area and examine it in lab for determining cancer. Biopsy is done by taking removed tumours in surgery.

Blood test: It is done to count total cells of RBCs, WBCs, platelets as a measure of function of kidney, liver and general health.

Laparoscopy: A thin lighted tube is used to see into ovaries and pelvic organs and tissues area. The tube is inserted by taking a small incision in the lower abdomen. It is used to planm surgery or other treatment and determine ovarian cancer stage.

Chest x -ray: It is done to see metastasis of cancer to lungs. The spread may lead to fluid accumulation around the lungs. ^[38, 39]

Allopathic medicines:

The term allopathy was coined by Samuel Hahnemann in 1810. Allopathy is made up of 2 Greek words allos means other, different + pathos means suffering. In 2001 (WHO) world health organization defined allopathic medicines ds a broad category of medical practice that is sometimes called western medicine, biomedicine, evidence-based medicine or modern medicine. Allopathic medicine also known as in which medical doctors, health care professionals nurses, allopathy. It is a health system 0 pharmacists and other are licensed to practice and treat symptoms diseases by using medication, surgery radiation as well as other therapies and procedures.^[10,11]

Ayurvedic medicine:

Ayurveda is a traditional medical system frame for India that comes from the Sanskrit words "ayus" (life) and "vedas"(knowledge). As a whole it means "knowledge of life,") Ayurveda was developed more than 3000 years ago 13 in India

Ayurveda begins with accounts of transmission of medical knowledge from the gods to sages. and then to human physicians. al Sushrutasamhita (sushrata's compendium frame the work as the teaching of Dhanvantari (Hindu god of Ayurveda) incarnated as king Divadasa of Varanasi to a group of physicians

including Sushruta. Ayurveda, describes three elemental doshas viz. vata, pitta and kapha, and state that balance of doshas results in health while imbalance of doshas result in disease.^[12,13,14]

ALLOPATHIC TREATMENTS FOR OVARIAN CANCER:

- 1 Chemotherapy
- 2 Surgery
- 3 Radiation therapy
- 4 Targeted drug therapy
- 5 Immunotherapy
- 6 Hormone therapy

1 Chemotherapy:

In chemotherapy numbers of drugs are used to kill cancer cells. Generally it is suggested after surgery sometimes it is given before surgery to stop recurrence. Ovarian cancer shows response to chemotherapy. It is given by different routes like mouth, intramuscular, intravenous as well as intraperiton and routes too. In these treatment carbon compounds such as cisplatin, carboplatin and taxane such as paclitaxel or docetaxel are used. Carboplatin is used than cisplatin to minimize side effect. Chemotherapy is done if the cancer is at stage 1 or high stage. At earlier stage having high grade. And if cancer come back after first treatment. Usually chemotherapy is given Such 6 cycles given are if needed once in every 3 weeks. The goal of chemotherapy is to shrink the tumours and make them easy to remove. After three cycles of chemotherapy CT scan is done to check response for chemotherapy.^[20, 21,22]

Advantages:

- Chemotherapy is suggested as main treatment if cancer cannot be removed surgically.
- If patient is not well enough for operation then chemotherapy is an option.
- Chemotherapy is done the time needed. In as very low cases outpatient in most of hospitalization is needed
- Chemotherapy before surgery sorry helps early removal of cancer cells.6 cycles of chemotherapy over 3 cycle decrease the recurrence of tumor in serous cancers.^[22,23]

Side effects of chemotherapy:

- Loss of appetite
- Tiredness
- Feeling sick
- Decrease in immunity
- Bleeding and bruising easily Diarrhoea or constipation
- Hair fall of hair^[21]

2 Surgery:

The surgery is nothing but removal of ovaries, uterus/womb fallopian tubes and other issues depending on the stages of cancer. It is the widely used treatment for ovarian cancer.

Goals:

- Confirm the cancer stage accurately
- Remove as much cancer as possible
- In staging surgery removal of following parts occurs.
- Ovaries as well as fallopian tubes -(bilateral salpingo- oophorectomy)
- Uterus- hysterectomy
- Omentum (fatty layer of tissue covering abdomen) -omentectomy

Removal of as much as possible cancer this is called debulking. In addition to staging surgery debulking involves debulking of other abdominal tissues like large intestine, small intestine, bladder, pancreas, liver, spleen and gall bladder. In debulking the cell visible cancer larger than 1 cm is removed (optimally debulking process) at early stages of ovarian cancer surgery is preferred. At early stages only ovaries and fallopian tubes are removed during surgery. Patient might place 1 ovary and 1 fallopian tube if wants children. In advanced stages along with ovary,, fallopian tubes, uterus and abdominal tissues are also removed. Depending on patient time of recovery varies in patients. It takes 3-7 days to stay in hospital after surgery it need 3 or more months to totally recover. Not all ovarian cancer are treated with surgery it may need other treatment too before and after having surgery. ^[24]

Advantages:

- Among 10 more than 7 people have recurrence such people are treated by surgery.
- Surgery along with chemotherapy improve patient survival compared to chemotherapy alone or surgery alone.
- Surgery is one of the crucial treatment for ovarian cancer.
- Although there is less outcome but cancer can be completely removed through surgery. ^[24, 26]

Side effects:

- Bleeding from vagina.
- Nausea
- Infection
- Damage to nearby organs like bladder gonads.
- fever
- Redness, belly pain, liquid oozing from the Site of Surgery. Night sweat
- Hot flashes
- Fatigue
- Dry vagina

- Mood shifts.^[25]

3 Radiation therapy:

In radiation therapy x-ray radiations are used to kill cancer cells. It is not a primary treatment for ovarian cancer. It is used to treat cancer spread in later stages .External beam radiation and brachytherapy are the types of radiation therapy.

External beam radiation:

These uses strong x-rays to kill cancer cells. In this x-rays machine focus radiation on cancer area. It is fast and painless process. Every session of external beam radiation is only for few minutes Treatment time is 5 time in a week for several months.

Brachytherapy:

It is rarely used for ovarian cancers. These radiation are called internal radiation . In this treatment radiation pellets are placed inside body by a small device near cancer cells. The radiation from the pellets kills the cancer. The radiation from the pellets kills the cancer the pellet size is as small as rice grains and must be radioactive for few weeks.^[27]

Advantages:

- Side effects gets improve after few weeks
- Do not cause any pain during treatment
- Small treatment time as compared to surgery and chemotherapy
- It is used in advance stage cancer after chemotherapy and surgery to reduce symptoms of cancer.
- It is used as palliative treatment on its own ^[27,28]

Side effects:

- Nausea and vomiting
- Fatigue
- Skin redness
- vaginal discharge
- skin blistering
- Skin redness.
- Vaginal irritation
- Cystitis ^[27]

4 Targeted drug therapy:

Targeted drug therapy is a type of treatment which uses drugs to identify specific and unique features of cancer cells to attack them. It acts in such way that normal cells or healthy cells would not damage^[29]

Mechanism:

Cancerous cells are different in normal cells as the changes in their genes causes changes in cell cycle make them quickly divide, grow rapidly, also repair themselves and interact with other cells to do similar things without control.

Different person have different changes in their gene which produces unique proteins or enzymes that tells the cancer cell how it should copy and grow in body. Targeted drug therapy is made to target certain cancer cells, take control, attack destroy them. The drugs are built to know and target cells if they have-

- In large amount presence of certain proteins on cancerous cells.
- A type of protein that other normal cells don't have
- Mutated proteins on cancer cells
- Genetic changes in makeup of the DNA that doesn't show up on normal cells.

When drugs find the cells they are they are targeting they work to –

- Block or turn off chemical signals that tells cancer cells to multiply.
- Change proteins within the cancer cells. This kills them.
- Make immune system to attack and kill cancer cells.
- Deliver toxins to cancer cells to kill them but leave normal cells alone

1 Bevacizumab

Also known as avastin. These are angiogenesis inhibitors. Angiogenesis is the process of forming new blood vessels for cancer cells to spread angiogenesis requires. This drug attacks a protein called VEGF and slow or stops cancer growth. In advanced epithelial ovarian cancer. Avastin shrinks or slow down the growth of cancer cells. This are given as infusions work better than chemotherapy. These are given as infusions.

2 PARP inhibitors

Poly (ADP) -ribose polymerase inhibitors (PARP inhibitors) are olaparib, rucaparib, and niraparib. PARP enzymes helps in repair damaged DNA inside cells. If mutation in BRCA genes can make it hard for a cell to repair it's DNA this leads to cell death.

All these drugs are taken daily through mouth in the form of capsules or pills.

3 Drugs that target folate receptors -alpha

The high level of folate receptors- alpha protein on a cell is seen in many ovarian cancers. The drugs that target these proteins is might be a good option as treatment. A lab made antibody linked chemotherapy miravetruximabsoravtansine (elahere)

Which is an antibody drug conjugate (ADC). This act on folate receptors- alpha protein and gives directly of them to cancer cells. It is used in epithelial ovarian cancers. The drug is given as infusion in every three weeks.

- drugs that target cells with NTRK gene changes

E.g. Larotrectinib (Vitrakvi) entrectinib (Rozlytrek) some ovarian cancers have changes in NTRK genes. Abnormal cells with NTRK gene grows and spread these drugs stops the protein made by abnormal NTRK gene. This is used in advanced ovarian cancer who do not had good effect by other treatments. ^[30]

Advantages:

- Unlike chemotherapy and therapy targeted therapy drugs kills existing cancerous cells and stop new one from forming in body.
- As researchers know more about cancer behaviour more drugs may become available.
- Several types of cancers can be treated by this therapy.
- Can be administered both by intravenous and oral routes. ^[29]

Side effects:

- Each targeted therapy had different side effect commonly they include.
- Dizziness
- Fatigue
- Nausea
- Vomiting
- Constipation diarrhoea
- Weight gain
- Heart problem
- Mental confusion.
- Nerve damage
- Weakness
- Numbness
- Tingling
- Loss of appetite
- Betty pain in belly muscle joint
- Chances to develop blood cancer in case of PARP inhibitors.
- Blood cots
- Severe bleeding
- Slow wound healing
- Colon perforations.
- Fistulas^[30]

5. Immunotherapy

Immune system of the body protect body from viruses, bacteria and other antigens. Unlike this as cancer cells are the part of our body our immune system is unable to respond them.

Immunotherapy is nothing but a form of cancer treatment that helps immune system to identify and respond to cancer cells. It is generally given in advance stages of cancer through IV infusion (Pembrolizumab) in every 3 weeks or 6 weeks. ^[31]

TYPES:

1. Immune checkpoint inhibitors

These are the most effective therapy for incurable tumours including ovarian cancer. These works by blocking natural immune response inhibitor pathway by enabling T cells to remain active and remove cancer cells.

2. Monoclonal antibodies

Antibodies against PD-1 /PDL-1 are used in malignant melanoma, lung cancer as well as urolithelial cancer. Monotherapy with nivolumab gives a low tumor response in ovarian cancer. Pembrozumab is effective only in small fraction of ovarian cancer recurrence.

3. Adoptive cell transfer

Lymphocytes as analogue tumours tissue or target tumor specific antigen can be infused to activate immune system in cancer patients.

4. CAT-T cell therapy

These are genetically engineered WBC (T cells) which are patient derived and are formed to identify tumor cell surface antigen and activate immune system.

5. Cancer vaccine

Vaccine induced immune system inhibits tumor growth and recurrence by modulated immune responses. E. g. Vaccines including mutated p53 peptide, NYESO-1 and mesothelin were investigated in ovarian cancer.

6. Cytokines

Cytokines are the proteins which stimulate immune system.

7. Oncolytic virus

These are modified viruses specially designed to infect or kill cancer cell. ^[31, 32]

Advantages

- In advanced stage ovarian cancer, immunotherapy is given with other treatments.
- It is useful if cancer has certain types of genetic changes.
- If the cancer grows after having chemotherapy or surgery immunotherapy is used.
- It activates immune system to activate by its own to fight with cancer cells.
- Combination therapy with chemotherapy or other drugs gives beneficial outcomes. ^[31]

Side effects

- Autoimmune disorder
- Hyperthyroidism
- Hypothyroidism
- Skin rashes
- Neurological syndrome
- Dermatomyositis
- Nausea, vomiting ,fatigue ^[31, 32]

6] Hormone therapy

In hormone therapy some drugs are prescribed by physicians to slow down hormone e.g. Estrogen. This can be done as cancer cells are fueled by these hormones so they go and spread in body.

Hormone therapy is rarely used to treat epithelial ovarian cancer. Also hormone therapy is not a main treatment for ovarian cancer it often followed by surgery and chemotherapy. It is given both by systemic and oral routes of administration.

Common drugs: Goserelin, leupromide, tamoxifen, anastrozole, exemestane, letrozole . ^[33]

Role of hormones in ovarian cancer:

- Gonadotropins

These are FSH and LH synthesized by anterior pituitary regulates gametogenesis and steroidogenesis. FSH and LH receptors play role in carcinogenesis and prognosis of ovarian cancer.

1. GnRH

It is synthesized by hypothalamus as growth modulator of reproductive system. This hormone is responsible for cell proliferation. It has anti-proliferative effects in tumours . This can be a positive factor for treatment.

2. Androgens

This hormone is synthesized by adrenal glands and ovaries. Androgens have been reported to promote metastasis and tumorigenesis in malignancies.

3. Estrogen

Estrogen is referred as group of female hormones which are synthesized from androgens through aromatase activity of granulosa cells in ovaries. It has endocrine activity of granulosa cells in ovaries. It has endocrine sensitivity in breast cancer and altering DNA sequence in epithelial ovarian cancer.

4. Progesterone

It is steroid hormone which is secreted by corpus luteum in ovaries. It is responsible for expression of certain genes by binding with nucleus. This activity of expression has been increased in case of tumor cells^[34]

Advantages:

- Hormone therapy act as a preventive measure to stop metastasis of ovarian cancer.
- Some hormones are also act as treatment to stop proliferation e. g. GnRH
- This therapy is often recommended for stromal ovarian cancer.
- If hormone act as a causing agent for metastasis no other treatment works it can be altered by hormone therapy.
- Hormone therapy stops come back of cancer^[33, 34]

Side effects:

- Hot flashes
- Dryness in vagina
- Weak bones and joint pain
- Pain in muscle
- Problems with sex^[33]

AYURVEDIC MEDICATION TREATMENTS:

As allopathic treatments have lots of side effects it is difficult for a patient to fight a patient. They generally lose their hope, confidence. So they might have high chances of cancer come back therefore with allopathic treatments they must need supplementary treatments like herbs, yoga, acupuncture or massage.^[40]

In Ayurveda the imbalance of three doshas (vata, pitta and kapha) is indication of the increased toxins in body.^[13]

According to ayurveda ovarian cancer is nothing but a cyst (gradnhi) caused due to kaphadoshas. Due to samprati means pathogenesis of granthi (glands) the mamsa (muscle fibers), rakta (blood) and medodhatua are affected. When the levels of the impurities or toxins gets increased they are stored in the form of cyst^[41]

THERAPIES IN AYURVEDA:

Acupuncture: In this therapy tiny needles are inserted at precise places or points in body by practitioners. By this technique nausea caused by chemotherapy is relieved. Also the pain in certain cancers lowers.

Aromatherapy: In Aromatherapy fragrant oils are used to provide calming sensation. Oils having scents like lavenders can be used during massage or added in bath water. Aromatherapy is helpful in decreasing nausea, pain and stress.

Cognitive behavioral therapy: It is a talk therapy during CBT session psychotherapist works on patients views on challenging situation more clearly and respond in more effective way. It can solve sleep problems and sound sleep.

Exercise: The signs and symptoms of cancer treatment are managed by exercise. Gentle exercise relieve stress and fatigue and helps in better sleep. Many studies show that the exercise increase life of patient and also improve quality of life.

Hypnosis: It is deep state of having concentration. In this the practitioners hypnotize the patient by gentle talk and helps to relax. They used to focus on goals by controlling pain and reduce stress, anxiety, nausea, vomiting such problems can be prevented by this therapy.

Massage: It is the process through which practitioners kneads skin, muscles and tendons. There are several massage methods exist. This promotes relaxation and relieve stress.

Meditation: Meditation is a state of deep concentration in this mind focus on the images, sounds, or ideas especially positive thoughts. Meditation is safe. It is done for few minutes to improve calmness.

Music therapy: In this patient listen to music, play instruments, sing songs, write lyrics. A music therapist guide or design all this process.

Relaxation techniques: Relaxation techniques are deep breathing guided by imagery. Relieve stress caused in ovarian cancer. Relax patient during chemotherapy and diagnostic tests.

Yoga: Yoga include twisting, bending, stretching, deep breathing session for few minutes yoga helps to lower levels of fatigue and depression, anxiety in ovarian cancer and breast cancer.

Mechanism of action of herbs:

1. Cytotoxic effect
2. Inhibit proliferation of promote apoptosis
3. Supress cell migration
4. Reactive oxygen species damage
5. Cell cycle arrest
6. Autophagic cell death
7. Angiogenesis inhibition
8. Interfere with RNA expression
9. DNA damage response^[45]

HERBAL DRUGS USED IN CANCER TREATMENT:

Sr. No	Herbal plant	Botanical name and family	uses in ovarian cancer
1	Ginger [44, 48]	B.N = <i>Zingiberofficinale</i> F = zingiberaceae	Neuroprotective, cytotoxic effect on cancer, antioxidant, antimicrobial, and anti-inflammatory.
2	Aloe Vera ^[49]	B.N. = <i>Aloebarbadensis</i> F= Liliaceae	Inhibits growth of cancer cells ,stops metastasis , wound healing and skin protective

3	Turmeric ^[50]	B.N. = <i>Curcuma longa</i> F = Zingiberaceae	Reduce side effects of chemotherapy , causes apoptosis in cancer cells , delay cancer
4	Moringa Tree ^[51]	B.N.= <i>Moringa oleifera</i> F= Moringaceae	Induces apoptosis in ovarian cancer cells, hypotensive, hyperthyroidism, antiulcer, antispasmodic, hypoglycemic, estrogenic
5	Shatavari ^[52,53]	B. N. = <i>Asparagus racemosus</i> F= Asparagaceae	Decrease stress, increase stamina, it shows it's effects on female reproductive system, maintain fertility.
6	Ashoka ^[53]	B. N. = <i>Saraca indica</i> F. = Caesalpiniaceae	It act as uterine tonic, menstrual disorders, premenstrual syndrome, abnormal bleeding, cytotoxic effect on tumor cells.
7	Guggul ^[55]	B. N. = <i>Commiphora mukul</i> F = Burseraceae	Antiproliferative , proapoptotic effects, cytotoxic for cancer cells, inhibition of DNA synthesis in cancer cells ,
8	Kalmegh ^[56]	B. N. = <i>Andrographis paniculata</i> F. = Acanthaceae	Causes cell cycle arrest and ultimately apoptosis in cancer cells, immunomodulatory and anti angiogenesis effects.
9	Amla ^[57]	B. N. = <i>Emblica officinalis</i> F. = Phyllanthaceae	Induce autophagy in ovarian cancer cells, angiogenesis inhibitors, hormone balance , neuroprotective.
10	Ashwagandha [43]	B. N. = <i>Withania somnifera</i> F= Solanaceae	Enhance immune response, inhibit cancer progression, reduce stress and anxiety.
11	Giloy/guduchi [58]	B. N. = <i>Tinospora cordifolia</i> F. = Menispermaceae	Antioxidant, boost immune system, anticancer potential in breast and ovarian cancer, kill pathogens.
12	John wort's ^[59]	B. N. = <i>Hypericum perforatum</i> F= Hypericaceae	Depression, emotional behavioral complications in children, premenstrual syndrome

Advantages:

- Ayurveda reduces side effects after chemotherapy and radiation therapy
- It helps to improve immune response
- Ayurvedic treatment decrease cancer prognosis
- Some ayurvedic herb has power to kills cancer cells (cytotoxic effects)
- Ayurvedic treatments boost confidence in patients and give them long life
- No ayurvedic treatment cause drug dependency ^[46]

Side effects:

- Mild constipation may occur
- Drug interaction
- Allergy of certain herbs in some patients ^[47]

CONCLUSION:

The aim of this review article ovarian cancer: scenario of allopathic and ayurvedic medication treatments is to bring all the treatments for ovarian cancer beneath a roof.

Treatments their uses possible outcomes and diagnosis are stated to clear all the concept about the ovarian cancer.

As cancer do not have any specific treatment the current treatment has lots of side effects than it's benefits. The patients loose their hope of survival after having treatment. Ayurvedic treatment plays vital role in reducing such side effects and boost confidence in patient.

There is need of strong treatment for cancer having lesser side effects. Ayurvedic and novel drug delivery system may achieve this through research. What to do what not to do that confusion of patient is also cleared through this article. The idea about all the treatment as well as therapies with advantages and side effects is given which helps to choose better treatment. Also this helps to do further research on this topic. Integrating allopathic medicine and ayurvedic treatment improve health in cancer patients.

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