Safety aspects of combining alternative and complementary medicine with standard treatment of breast cancer

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Alternative medicine indicates to non-standard treatment used instead of standard therapy. **Complementary medicine** used along with standard therapies. Together they are referred to as **CAM (complementary and alternative medicine) (1).**

CAM can be appealing because it often includes natural remedies and ingredients to alleviate any cancer related symptoms (anxiety, depression, insomnia, headache) or even treat the disease itself, however these methods often wrongly claim to have effect when there is no scientific evidence. Some alternative therapies can interfere with standard therapy and alter its effect (1, 2).

Healthcare professionals should always ask patients about the use of CAM and be open and receptive when patients disclose their usage. Not asking may set the patient at risk from adverse interactions and could exclude them from effective therapies (2).

Impact on the survival

Interactions with Tamoxifen

Interactions with chemotherapy

References

Partners

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Impact of CAM on cancer survival

Neuhouser et al (3) investigated the long-term survival of breast cancer (BC) patients and it's potential relation of using CAM. In the cohort, the use of CAM was common, mainly the use of natural products.
The principal finding was that natural products and botanically-based estrogenic supplements did not have effect on breast-cancer specific or total mortality (3).

In the oncology community, recommending CAM is controversial however it is common understanding that additional trials are needed to investigate to actual interactions.
There is still concern that CAM products can either interfere with standard treaments or fuel up residual hormone-sensitive tumours in the case of products with weak estrogenicity (3).

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CAM Interactions with Tamoxifen

Tamoxifen is the most prevalent hormonal therapeutic drug used for the treatment of estrogen receptor positive (ER+) breast cancer. Evidence has shown that up to 70% of BC patients use some natural products which may increase the likelihood of drug interactions (4).

Investigations have shown that overall, the combination of natural or plant-based products with standard treatment with tamoxifen increases anti-cancer effect, inhibition of tumour cell proliferation and sensitizing breast cells to tamoxifen and minimizing side-effects yet some studies show no effect.

Studies on the mechanism of synergistic anti-cancer effect need to be enhanced (4).

Specifics of natural herbs

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Specifics of natural herbs

Herbs have been used in clinical practice for thousands of years. While continuous efforts in science and laboratory studies have given rise to variety of evidence from the derivation of anti-cancer components, it is still a matter of further research (4).

The clarificarion of the herbal formula compsitions and quality control are often unaddressed (4).

Estrogen-like activity

Increase of the bioavailability of tamoxifen

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May reduce anti-cancer effect of Tamoxifen (in latin):

- Angelica sinensis
- Apiaceae
- Paeonia lactiflora
- Rehmannia glutinosa
- Astralagus mongholicus Bunge
- Glycyrrhiza glabra (4)

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Increase the bioavailability of Tamoxifen:

- Morin
- Silybin
- Epigallocatechin gallate
- Myricetin
- Baicalein
- Curcumin
- Kaempferol or quercetin (4)

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CAM interactions with chemotherapy

Chemotherapeutic agents are generally toxic with additional side-effects which is why cancer patients combine herbal products with their anti-cancer drugs (5).

The potential risk of herb-drug interactions is mainly caused by the issue that chemotherapy drugs have narrow therapeutic window, meaning any alterations can lead to increased toxicity (5).

Also, most cancer patients have co-morbidities which necessiates the use of multiple drugs which would induce their risk of experiencing herb-drug reactions (5).

Garlic

Grapefruit juice

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Garlic (Allium sativum) is one of the most popular herbal products used to supplement the treatment of infections, diabetes and heart disease and it is also commonly used by cancer patients (5).

Cox et al (8) who administered docetaxel alongside with garlic to metastatic breast cancer patients, found that garlic caused the decrease of docetaxel clearance which may pose hightened risk to toxicity due to chemotheapy agent's accumulation.

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Grapefruit (Citrus paradisi) juice is not a regular herbal supplement used for medicinal purposes however as a drink, it has been reported to influence the pharmacokinetics of variety of drugs (5).

Yin et al (6) who investigated the interaction between Nilotinib and grapefruit juice, found that the supplement caused a 60% increase in the peak concentration of chemotherapy agent. On the other hand, Valenzuela et al (7) found that consuming alongside with doxetaxel, grapefruit suppresses the clearance of the agent.

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