

Late Effects of Chemotherapy in Breast Cancer Survivors

Assoc Prof Alexandre Chan

Department of Pharmacy

With improved early detection and increasingly effective therapies, the number of cancer survivors has increased dramatically over the past decade. Yet, many survivors suffer from late effects of cancer and its treatment. Of particular concern are physical effects, including post-chemotherapy cognitive dysfunction and fatigue, and psychological distress, including depression and anxiety. With the aim of developing effective strategies to reduce the symptom burden among cancer survivors, Assoc Prof Alexandre Chan and his research team recently completed a series of important studies evaluating the prevalence, mechanisms and trajectory of these problems among breast cancer patients and survivors.

Assoc Prof Chan comments that although chemotherapy is very effective in treating cancer, it is also very toxic. “Both physical effects and psychological distress can lead to tremendous problems in cancer survivors”, he remarks. Post-chemotherapy cognitive dysfunction can involve symptoms such as memory loss, inability to concentrate, difficulty in thinking, and other subtle, cognitive changes that can last for many years. To explore how these changes affect quality of life, the research team first conducted a focus group study on breast cancer patients’ cognitive changes during and after chemotherapy treatment.

Most of the participants encountered memory loss, difficulty in decision-making and speech problems. Although these symptoms were by-products of the physical (fatigue and aging) and psychosocial (anxiety and mood changes) effects of the treatment, Assoc Prof Chan notes that “many of these patients understood the need to receive cytotoxic chemotherapy, as early stage breast cancers are highly curable”.

Focusing on the association between fatigue and anxiety, the team followed up with a cross-sectional study comparing the severity of perceived cognitive disturbance in chemotherapy receiving and non-chemotherapy receiving breast cancer patients. They found that the chemotherapy receiving patients experienced more fatigue and moderate to severe anxiety than their non-chemotherapy counterparts. Chemotherapy and endocrine therapy were also strongly associated with perceived cognitive disturbances.

The team then conducted another cross-sectional study to evaluate the presentation of anxiety symptom domains among breast cancer patients and to identify clinical factors associated with the occurrence of anxiety. Patients receiving chemotherapy experienced more severe anxiety symptoms than pre- and post-chemotherapy patients. Fatigue and the concurrent receipt of chemotherapy were the strongest factors associated with this anxiety, which was also associated with other neurological symptoms including numbness and tingling.

These preliminary studies have enhanced our understanding of how the mechanisms and presentations of chemotherapy-induced symptoms overlap within symptom clusters. On behalf of the team, Assoc Prof Chan thanks the patients who participated in the studies and collaborators at the National Cancer Centre Singapore and KK Women’s and Children’s Hospital for their invaluable support.

To further improve the understanding of how the symptom burden progresses throughout cancer treatment, the team is currently conducting a large-scale, longitudinal study at local cancer centers. Assoc Prof Chan explains that the ultimate goal is “to utilize appropriate interventional strategies to curb the side effects that cancer survivors are experiencing from their treatment”.

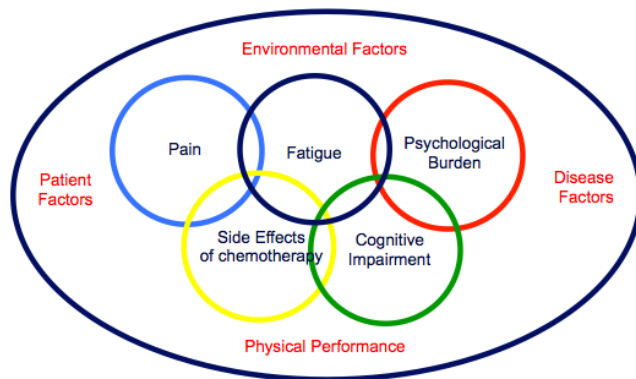


Figure 1: Proposed Symptom Clusters Among Cancer Survivors



Figure 2. Assoc Prof Chan and members of his research group

Publications:

Chan, A., Ho, H.K., Cheung, Y.T., and Teo, Y.L., Supportive care in cancer patients: current challenges and opportunities. *Adv. Pharmacoepidem. Drug Safety* 1, e111 (2012), DOI:10.4172/2167-1052.1000e111.

Cheung YT, Lee H, Chan A. Exploring clinical determinants and anxiety symptom domains among Asian breast cancer patients. *Support. Care Cancer Epub* (2013) DOI: 10.1007/s00520-013-1769-8.

Cheung, Y.T., Shwe, M., Chui, W.K., Chay W.Y., Ang, S.F., Dent, R.A., Yap, Y.S., Lo, S.K., Ng, R., and Chan, A., Effects of chemotherapy and psychosocial distress on perceived cognitive disturbances in Asian breast cancer patients. *Ann. Pharmacother.* 46, 1645-55 (2012).

Cheung YT, Shwe M, Tan YP, Fan G, Ng R, and Chan A. Cognitive changes in multiethnic Asian breast cancer patients: a focus group study. *Ann. Oncol.* 23, 2547-52 (2012).