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### Effect of chemotherapy on cognitive functions

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Neoadjuvant chemotherapy is an important modality for the treatment of breast cancer, it includes anthracyclines based regimen [5-fluorouracil, doxorubicin and cyclophosphamide (FAC); cyclophosphamide, epirubicin and 5-fluorouracil (CEF)] and non-anthracycline based regimens [cyclophosphamide, methotrexate and 5-fluorouracil (CMF)]. These regimens were reported to induce cognitive impairment in patients receiving them. Studies suggest increased levels of pro-inflammatory cytokines during chemotherapy. Thus, it is worthwhile to conduct a study to see the effects of FAC, CEF and CMF on cognition and circulatory cytokines at different cycles of chemotherapy in breast cancer patients. This was prospective longitudinal cohort study on 80 newly diagnosed HER-2 negative breast cancer patients. Patients receiving FAC, CEF and CMF as neoadjuvant chemotherapy were 27, 26 and 27 respectively. Pro-inflammatory cytokine levels and cognition status were assessed at 4 time points that is one day before 1st, 2nd, 3rd and 4th cycle. Serum was withdrawn at each time point to analyse IL-6 and IL-1 $\beta$  levels by ELISA. Mini mental state examination (MMSE) questionnaire was used to analyze cognitive status. Anthracycline based regimen were found to increase levels of IL-6, IL-1 $\beta$  and decrease MMSE scores compared to CMF regimen ( $p < 0.05$ ). Anthracycline based regimen receiving patients were found with more cognitive decline with increased peripheral inflammation than CMF. The results suggest that anthracycline based regimen caused comparatively higher peripheral inflammation than CMF, which could be the possible reason for decline in cognitive status in anthracycline based regimen than non-anthracycline based regimen.

### Biography

Mohd Ashif Khan is pursuing his PhD in Pharmaceutical Medicine from Jamia Hamdard, New Delhi, India under the supervision of Dr. Nidhi. He has completed his Master's in Pharmacy in Pharmaceutics from Jamia Hamdard, New Delhi, India. He has recently published a paper in a reputed journal. His current area of work is cancer and cognition.

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