To review and analyze if increased BMI is associated with chemotherapy-induced adaptive NK cells to treat cancer.

**PURPOSE**

- To review and analyze if increased BMI is associated with lower pathological complete response (pCR) rate for operable breast cancer after NACT.

**METHODS**

- **Data Sources:** PubMed and Cochrane database till December 31, 2018.
- **Study Selection:** We included observational studies and randomized trials that evaluated association of BMI with pCR in operable breast cancer patients undergoing neoadjuvant chemotherapy (NACT).
- **Data Extraction and Analysis:** Two authors independently extracted data and rated the study quality.

**RESULTS**

- **13 studies including a total of 14179 women with operable breast cancer who underwent NACT were identified.**
- **2 studies were pooled analysis of prospective clinical trials (10622 patients).**
- **11 studies were retrospective case control studies (3557 patients).**
- We later excluded one study (120 patients) which compared BMI ≥ 30 vs BMI < 30 instead of using BMI of 25 (adopted by all other studies) as dividing point of BMI for analysis.
- **All studies provided data with BMI divided into two subgroups (BMI ≥ 25 vs BMI < 25).** Pooled analyses demonstrated overweight/obese women were less likely to achieve pCR after NACT when compared with women in the under-normal weight group, OR 0.78 (95% CI: 0.68, 0.88).

**REFERENCES**


**DISCUSSION**

- In this meta-analysis, we demonstrated in more than 14000 patients that increasing BMI resulted in decreased pCR rate after neoadjuvant chemotherapy. Due to data limitation, we were not able to do pooled analyses of BMI to pCR rate based on breast cancer subtypes. As different subtypes of breast cancer have different biological behavior, the association of increasing BMI to decreasing pCR rate may not apply to all the breast cancer subtypes [4].
- Under-dosing of chemotherapy in overweight and obese breast cancer patients may be one of the underlying causes [5].
- High circulating estrogen and insulin in obese breast cancer patients may be related to worse outcome [6].

**CONCLUSIONS**

- Overweight and obese breast cancer patients had lower pCR rate to NACT compared to those with under-normal weight.
- Further prospective studies may help to confirm this finding and to clarify underlying mechanisms.