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Histopathologic evaluation of breast specimens after neoadjuvant chemotherapy

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Neoadjuvant chemotherapy refers to chemotherapy administered before surgery and it is the standard treatment in locally advanced breast cancer. In the last decade the indications for neoadjuvant chemotherapy has broadened to include its use in the treatment of earlier stages of breast cancer with the aim to obtain tumor shrinkage and improve the rate of breast-conserving surgery. More recently, this treatment modality is increasingly used to obtain a quantifiable evaluation of sensitivity or resistance to chemotherapy. The potential of tumor response might also allow individualization of systemic treatments and therapid assessment of new drugs. Furthermore, clinical trials in neoadjuvant setting are increasingly being utilized for the evaluation of new drugs and novel therapeutic strategies using pathological complete response, a surrogate marker for survival, as the primary endpoint. Complete eradication of invasive tumor cells in the primary tumor bed following neoadjuvant therapy is strongly correlated with improved disease-free survival and overall survival. The excision or mastectomy specimens display a range of histopathologic changes after neoadjuvant chemotherapy. Appropriate specimen handling is essential to evaluate response to neoadjuvant chemotherapy and includes not only careful assessment of specimens but also requires correlation with clinical and imaging findings. There are different methods to quantitate residual tumor. In this presentation the author will review methods to evaluate breast resection specimens after neoadjuvant chemotherapy and discuss the classifications systems of residual tumor burden, and tumor biomarkers related to response to neoadjuvant chemotherapy.

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