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Claudin-4 as predictor of response to neo-adjuvant chemotherapy in breast cancer

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Background: Neo-adjuvant chemotherapy (NACT) is an integral part of multi-modality approach in the management of locally advanced breast cancers (LABC) and is vital to predict response in order to tailor the regimen for a patient. Claudins are important trans-membrane proteins in the inter-cellular tight junctions. Claudin-3, 4 & 7 are often present in breast tumor and are occasionally expressed at elevated levels. A prospective clinical study was conducted to assess whether these markers could serve as reliable predictors of response to NACT in patients with LABC.

Materials & Methods: 80 LABC patients after complete routine and metastatic work up were subjected to trucut biopsy and the tissue evaluated, immunohistochemically for claudin-4. Three cycles of NACT were given at three weekly interval & patients were assessed for clinical response following each cycle. Modified radical mastectomy was performed in all patients three weeks after the third cycle and specimen was re-evaluated for any change in the claudin-4 expression. The immunohistochemical response (change in the expression of claudin-4 marker) and the clinical response were correlated.

Results: A statistically significant correlation was observed between clinical and immunohistochemical response to NACT. Increase in the expression of claudin-4 indicated poor response to NACT and thus a poor outcome.

Conclusions: Claudin-4 can be effectively utilized as predictors of response to NACT.

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