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P001. AN AUDIT OF PATIENTS UNDERGOING NEOADJUVANT CHEMOTHERAPY AND ANALYSIS OF NODAL DISEASE TO GUIDE MANAGEMENT

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Introduction: For patients recommended neo-adjuvant chemotherapy (NAC), current practice for involved lymph nodes (LNs) at diagnosis is performing axillary node clearance's (ANC's). We have audited our practice to assess the level of axillary node disease on diagnostic ultrasound and post NAC pathology and reviewed how this information may guide management.
Method: Data was collected from breast-cancer patients who underwent NAC 2014-2018. All suspicious nodes were core biopsied. Further categorisation was performed for those with LN involvement at diagnosis along with tumour biology.
Results: 266 patients underwent NAC; pre-operative ultrasound nodal statuses included:

- No LN involvement - 120 patients (Group1) – (Sentinel Node biopsy (SNB))
- LN involvement - 146 patients (ANC):
  - 40 patients 1-2 LNs involved (Group2:low burden)
  - 106 patients ≥3 LNs involved (Group3:high burden)

GROUP 1

- 19/120 patients had involved SNB's:
- Majority (89%) had low disease burden
- 10 patients underwent ANC's
  - 3 had further disease

Total, 118 patients (98%) had no, or low disease burden

GROUP 2:

- 40 patients:
  - 14 patients had nodal PCR
  - 17 patients had 1-2 LN's residually involved
  - 9 patients had ≥3 LNs residually involved (8 were ER+)

GROUP 3

- 106 patients:
  - PCR in 33 patients
  - 20 patients reduction of LN involvement
  - 53 patients had high burden of axillary disease

Conclusion: Pre-NAC ultrasound is 93% accurate in identifying no or low burden axillary disease. This preliminary information could be used to inform future work in NAC patients with individualised axillary management pathways based on risk profile.

P002. ONE STEP NUCLEIC ACID AMPLIFICATION SENTINEL LYMPH NODE SAMPLING AS A PREDICTOR OF AXILLARY NODE STATUS IN EARLY INVASIVE BREAST CANCER: A UK SINGLE CENTRE EXPERIENCE

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Introduction: RD-100i One-Step Nucleic Acid amplification (OSNA) system analyses and amplifies mRNA from solubilised sentinel lymph node sampling (SLN) by detecting the level of expression of the cytokeratin-19 gene (CK19), an epithelial marker associated with breast cancer, giving a total tumour load (TTL) defined as the number of mRNA copies of CK19 (copies/μmol/L) . TTL indicates the presence of micro or macrometastases, allowing the surgeon to intraoperatively proceed to axillary node clearance (ANC) where positive. Evidence has shown OSNA copy number to be a predictor of axillary node status and survival.
Methods: A retrospective single centre cohort study of 728 patients undergoing wide local excision or mastectomy for early invasive breast cancer with intraoperative OSNA SLN or SLN preceding neoadjuvant chemotherapy was performed. Data was collected on tumour type, grade, size, presence of lymphovascular invasion, number of lymph nodes sampled, TTL, and histological metastases where ANC performed. TTL ≥5000 was taken as macrometastasis, and 250< TTL <5000 was taken as micrometastasis, TTL≥250000 was stratified as high risk.
Results: 723 patients underwent SLN sampling using OSNA. 17.2% (n=124) had macrometastases, 7.5% (n=54) had micrometastases. All patients with macrometastases underwent ANC and 61/124 had further histological lymph node metastases. Univariate logistic regression showed that (log) TTL was positively associated with further axillary lymph node metastases (p=0.607). High risk TTL carried OR=1.38 for further axillary metastases.
Conclusion: TTL using OSNA is a predictor of axillary node status in our patient population with early invasive breast cancer, supporting current evidence.

P003. EFFICACY OF IMMEDIATE AXILLARY CLEARANCE (AC) IN METASIN POSITIVE SENTINEL LYMPH NODE (SLN) BIOPSY ASSAY: A LARGE SINGLE CENTRE EXPERIENCE

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Introduction: Intra-operative assessment of the SLN allows an immediate AC to be performed in Metasin positive macrometastases (macro) patients. Surgical management of macro vs micrometastases (micro) is different. Differentiating between macro and micro is therefore essential and this can be done by intraoperative Polymerase Chain Reaction assay (qRT-PCR). The aim of this study is to assess the efficacy of immediate AC in Metasin positive patients.
Methods: The Metasin assay is an intraoperative molecular test which utilizes qRT-PCR to detect two predictive markers of metastases, Cytokeratin 19 (CK19) and Mammaglobin (MGB). Alternate 2mm slices of SLNs were tested with Metasin and the remainder by routine histological

examination. Micro was defined as tumour deposit between 0.2mm and 2mm and macro over 2mm on histology.
Results: 230 of 1255 patients (18%) proceeded to immediate AC and were spared a second operation. 183 patients (80%) were macro and 47 (20%) micro on Metasin. 9 of 1255 patients (0.7%) underwent a delayed AC as histology of SLNs showed macro. Out of these, 4 were negative and 5 were micro on Metasin. 38 of 43 Metasin micro patients (88%) were spared an axillary clearance.
Correlation of Metasin vs histology - immediate ACs

Histology / Metasin	Negative	Positivity in SLNs ONLY	Positivity in at least ONE N-SLNs	Total
Macrometastasis	43 (23.5%)	98 (53.5%)	42 (23%)	183
Micrometastasis	37 (78.7%)	8 (17%, micro)	2 (4.3%, micro)	47
Total	80	106	44	230

Conclusions: Differentiating between macro and micro helps decide appropriate surgical management of the axilla. Fewer patients with Metasin macro should have AC. Patients with Metasin micro should not have AC.

P004. INTRAOPERATIVE ASSESSMENT OF SENTINEL NODES IN MASTECTOMY PATIENTS

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Introduction: Intraoperative sentinel node assessment was routinely offered to patients undergoing curative breast surgery with negative preoperative nodal status. Our previous audit showed 34% patients undergoing mastectomy had positive OSNA results. Axillary radiotherapy is now increasingly being offered to node positive patients with one or two positive sentinel nodes. The aim of this audit was to assess the rate of positive sentinel nodes in patients undergoing mastectomy.
Methods: A retrospective audit of patients who underwent mastectomy from January 2015 to December 2017 was carried out. Mastectomy patients were identified from the Somerset Cancer Database, operative details and axillary treatment was recorded from the electronic patients record and analysed.
Results: Of the 461 patients who underwent mastectomy, 183 patients underwent sentinel node biopsy and OSNA. Amongst the OSNA group, thirty five patients (19%) had positive sentinel node and underwent axillary clearance. Seventy one percent of these patients had only one or two positive nodes on final histology where axillary surgery could be avoided. On an average, only 3 patients per annum had more than 2 involved nodes on final histology who would benefit from further axillary treatment.
Conclusion: Majority of patients with OSNA detected positive sentinel nodes had low nodal disease burden which could be easily managed with radiotherapy rather than axillary clearance.

P005. AXILLARY RADIOTHERAPY IS NON INFERIOR TO COMPLETION AXILLARY CLEARANCE IN PATIENTS WITH POSITIVE SENTINEL LYMPH NODE BIOPSY - A SINGLE-CENTRE OBSERVATIONAL COHORT STUDY

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Introduction: A decade ago, gold standard treatment for patients with a positive sentinel lymph node biopsy (SLNB) was completion axillary node clearance (cANC). Recently, this practice has been challenged, with several studies showing comparable outcomes following axillary radiotherapy or systemic treatment for limited nodal disease. Results of trials such as POSNOC are awaited. Our aim was to study outcomes of SLNB-positive patients treated with or without cANC or in our unit.
Methods: This is an observational cohort study of all SLNB-positive patients treated for invasive breast cancer at a single centre between 2010-2012. Data were collected retrospectively from patient records. Primary outcomes were axillary recurrence (AR), overall survival (OS) and disease-free survival (DFS).
Results: Of 289 patients, n=129 patients proceeded to ANC (cANC group). N=160 did not undergo ANC (noANC group), of whom 91.2% had radiotherapy to the axilla. Median follow up was 76 months (IQR=69-87). AR was 1.6% in the cANC group and 1.9% in the noANC group (p=0.83). Kaplan-Meier analysis demonstrated that OS did not differ significantly between groups (cANC: 81.4%, noANC: 86.2%, p=0.26) and neither did DFS (cANC: 85.3%, noANC: 93.8%, p=0.12). There was no significant difference in the proportion of Grade 2 or 3 cancers and ER-/Her2+ tumours.
Conclusion: In our cohort, outcome following axillary irradiation was non-inferior to cANC in terms of AR, OS and DFS at 6 years. While the groups were not matched in terms of prognostic factors, this study provides encouraging real-life data to support further research into more conservative axillary treatment.

P006. DOES THE TOTAL TUMOUR LOAD (TTL) AS DETECTED BY ONE STEP NUCLEIC ACID AMPLIFICATION (OSNA) PREDICT NON SENTINEL NODE POSITIVITY?

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Introduction: It has been suggested that TTL can be used to predict non-sentinel node positivity in breast cancer by dividing patients into low ($TTL<2.5x10^4$) and high risk categories ($TTL>2.5x10^4$). This is of increasing relevance as there is a move to more conservative axillary treatment in the post ACOSOG Z0011 era. Our objective was to test this theory for validity.
Methods: A retrospective review of all OSNA cases performed in Glan Clwyd Hospital since 2015. Data collection included patient and tumour demographics, sentinel node results, total tumour load, non sentinel node involvement.
Results: Eighty four OSNA procedures carried out on 80 patients, mean age 62 years. Tumour type 53(63%) IDC, 9(12%) ILC, 6(7%) Tubular, 3(4%) DCIS, 10(13%) others. Tumour grade 1 8(9%), grade 2 37(44%), grade 3 36(43%), in-situ 3(4%). Mean invasive size 25.7mm. Er positive 60(71%), negative 22(26%), unknown 3(4%); Pr positive 51(60%), negative 31(36%), unknown 3(4%); Her2 enriched 8(9%). Mean number sentinel nodes harvested 1.6 (range1-4); 20 patients had micrometastases, 21 patients had macrometastases, 19 patients had ANC. At ANC mean nodes excised 9.1(range5-14). TTL mean score 635076(range 260-5994620; median 10900).
Non-sentinel node involvement in 47% of ANC cohort. Non-sentinel node involvement was seen in two thirds (66.6%) of high risk patients ($TTL>2.5x10^4$) as opposed to only 30% of those deemed low risk ($p<0.000001$).
Conclusions: TTL identified a high risk population in our cohort. We propose a multicentre study to confirm the findings.

P007. RADIOLOGICAL VERSUS PATHOLOGICAL RESPONSE OF THE AXILLA TO NEOADJUVANT CHEMOTHERAPY: ASSESSING THE ACCURACY OF MRI RESPONSE PREDICTION

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Introduction: Neoadjuvant chemotherapy (NAC) can be used to downstage breast cancer and axillary disease to facilitate more conservative surgery. It is important to determine an imaging modality that can accurately determine which patients are appropriate for conservative treatment. This study aims to measure the accuracy of MRI in assessing the radiological response of axillary disease to NAC.
Methods: Retrospective data collection from a single institution, including all patients who underwent axillary node clearance (ANC) following NAC between May 2014-November 2017.
Results: 45 patients were included. Radiological complete response (rCR) was seen in 15 patients (33%). Four of these patients (27%) had 1-2 macrometastatic nodes on pathology, and three of these patients had $\geq$3 macrometastases (20%). 17 patients (38%) had pCR on ANC. Eight patients