

Material and Methods: The tissue specimens from patients were collected after breast surgeries and were snap frozen in liquid nitrogen. Part of all tissue was sent for routine histopathology. Lipid extraction was performed by using well established Folch method (Folch, 1957) using cholesterol and methanol (2:1 ratio). Tissue samples weighing 200 mg were grounded in the presence of liquid N₂ and then mixed with cholesterol: methanol (2:1) solution and further extracted. The NMR spectra of the extracted lipids was recorded immediately after the sample preparation. These experiments were performed on a Bruker Avance 800 MHz spectrometer.

Results: Over a period of eighteen months histopathologically confirmed 11 benign and 8 CaB were subjected to NMR analysis. Median age for both groups was 47 yrs. The spectral region from 0.5 ppm to 6 ppm shows strong presence of various lipids like cholesterol (Chol), esterified cholesterol (cholE), different side chains of saturated and un-saturated fatty acid, phosphatidylcholine (PL), triacylglycerides (TAG) and there resonance assignment was carried out by this experiment. Qualitatively, there is no difference in these two tissues (benign and malignant). There was significant quantitative difference between different lipid components. In Cancer breast the relative ratio of TAG/PL was found fifteen times lower than benign while that of CholE/Chol was two times higher in Cancer breast. No difference between saturated and unsaturated fatty acid chain in two groups was seen.

Conclusion: ¹H NMR analysis of lipid extract of breast tissue in Indian females shows there is significant elevation of phosphatidylcholine, plasmalogen and esterified cholesterol with decrease in triacylglycerol in cancer breast compared to benign tissue implying that there metabolism is definitely altered in carcinogenesis. This study analyzes the role of NMR as an additional diagnostic tool on the basis of examination lipid extract.

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Poster

Axillary Staging – a Useful Pre-operative Planning Tool

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Background: Pre-operative identification of a positive axilla will avoid a patient having to return for a second procedure after a positive sentinel lymph node biopsy as well hopefully reduce false-negative lymph node biopsy which may lead to under-treatment of the axilla.

Materials and Methods: We assessed consecutive patients over a 10-month period (April 2010–January 2011) who presented with a symptomatic breast cancer. All patients underwent axillary ultra-sound at time of diagnosis by the breast radiologist, and core biopsy of any suspicious nodes. Patients referred via the national screening programme, those receiving primary endocrine treatment and those with in-situ carcinoma were excluded. Data was recorded on the pre-operative ultra-sound and biopsy results as well as the final histology following axillary surgery. Recommendations regarding type of axillary surgery were discussed in a multi-disciplinary setting.

Results: Seventy-one patients were assessed during this time period, with a mean age of 60.7 years. Primary tumour size varied from 11–48 mm (mean 24 mm), there were 22 grade 3 carcinomas and 17% of patients were positive for HER2.

Pre-operative ultra-sound identified a positive axilla in 15% of patients thereby avoiding a second operation in 11 women. The sensitivity of axillary ultra-sound was 64% and specificity 94%. Nearly a third of the patients with a false negative axillary ultra-sound had a histological diagnosis of invasive lobular carcinoma.

Conclusions: Pre-operative axillary ultra-sound and core biopsy of suspicious lymph nodes should be considered mandatory in all patients diagnosed with invasive breast cancer. It should be used as an adjunct to formal surgical staging of the axilla by sentinel lymph node biopsy or axillary dissection. Lobular carcinomas appeared to be associated with a higher false negative axillary ultrasound rate. Accurate pre-operative staging tools as well as intra-operative techniques to assess the sentinel lymph node will reduce the number of patients returning for a second axillary procedure following a positive sentinel node biopsy.

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Poster

Male Breast Cancer – University Hospitals of Leicester Experience

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Introduction and Aim:

- Male breast cancer accounts for 1% of all breast cancers.
- To analyse the presentation, treatment & outcome of male breast cancer in Leicester.
- Incidence was compared yearly to female numbers.

Methods:

- Analysis of data of all male patients who presented with breast cancer between January 1995 and December 2009.
- We recorded clinical presentation, receptor status, 5 years survival rate, treatment methods and distant metastasis.
- Ratio of episodes of male and female breast cancers every year.

Results:

- 57 patients were recorded.
- Mean age of onset was 71.5 years with a range of 31–90 years
- The most common site was central
- The mean size was 23.3 mm (range: 1 mm–55 mm)
- The most common histological type is invasive ductal carcinoma
- 97.6% patients were oestrogen positive
- 88.9% patients were progesterone positive
- 10.5% patients developed metastasis. The sites of metastasis are shown in the graph.
- 5 years survival was 55.6%
- A total of 29 male patients (51%) diagnosed between 1995–2009 have died. Causes of death were identified for 16 of these patients and are shown in the graph
- Average age at death was 79.4 years (range: 54–92)
- 41 patients underwent surgery
- 38 patients underwent a mastectomy and 3 had wide local excisions.
- 16 Patients had no surgery and the reasons are shown in the chart.
- The average incidence ratio between male to female is 0.7%

Conclusions:

- In Leicester Male Breast cancer accounts for 0.7% of all breast cancer
- Most common site was central
- Majority were oestrogen and progesterone positive
- Most were invasive ductal carcinoma
- Most common surgical treatment was mastectomy
- 5 year survival is 55.6% which falls between 44% (1982) to 75% (1986) found at Helsinki University Hospital.
- Most common cause of mortality in these patients was due to the breast cancer.
- The number of new female breast cancer patients is slowly increasing over the years, whereas the incidence of male breast cancer patients is variable, however has decreased since 2006.
- There is no direct correlation between male and female breast cancer incidence.

References

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Poster

Correlating Breast Density Measured by MRI and Diffuse Optical Spectroscopic Imaging During Neoadjuvant Chemotherapy

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Background: Using MRI, we have shown that the density of the contralateral normal breast is reduced during neoadjuvant chemotherapy (NAC). Diffuse optical spectroscopy imaging (DOSI) can quantify components of breast density because of its strong sensitivity to hemoglobin, water and bulk lipid concentrations. In this study, DOSI was used to image normal breast tissue of breast cancer subjects undergoing NAC and the results were compared to fibroglandular tissue volume measured by MRI.

Material and Methods: A total of 15 breast cancer subjects (9 pre- and 6 post-menopausal) undergoing NAC were investigated. Broadband DOSI measurements of the contralateral normal breasts of the subjects were performed using a handheld probe placed on the breast surface. Tissue concentrations of hemoglobin, water, and lipid were calculated at each measurement point. MRI was performed on a 3.0T Philips scanner for 7 of the 15 subjects. All subjects were measured prior to the first infusion and repeatedly throughout NAC. The fibroglandular tissue was segmented on MRI, and the volume was calculated for comparison.

Results: Of the 7 subjects with MRI, there were a total of 22 corresponding DOSI+MRI studies done at different times during the NAC. The MRI fibroglandular tissue volume had a high correlation with water concentration ($r=0.659$, $p=0.0008$) and total hemoglobin ($r=0.650$, $p=0.0011$), and weaker correlation with bulk lipid concentration ($r=-0.503$, $p=0.017$). In the whole study population, premenopausal and postmenopausal subjects exhibited a 12.9% ($\pm 14.0\%$ SD) reduction and 5.3% ($\pm 2.1\%$ SD) increase, respectively, of normal breast tissue water