Breast Disease

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Overview of lecture

- History
- Examination
- Investigations
- Benign
- Malignant
History

- Age
- Risk
  - Lifestyle
  - Genetic
  - Pathological
- Last mammogram
Assessment

- 1 = Normal / Inadequate
- 2 = Benign
- 3 = Indeterminate
- 4 = Suspicious
- 5 = Malignant
Correlation

- Clinical = P
- Radiological = R
- Cytology = C
- Biopsy = B
Clinical Breast Examination

- Symptomatic patients:
- Clinical examination
  - Part of interdisciplinary diagnostic chain
  - Allows effective early diagnosis
    - Sensitivity of 54%
    - Specificity of 94%
Clinical Breast Examination

- CBE
  - sensitivity increased with larger tumor size
  - decreased with higher body weight
  - more sensitive in Asian women compared to white women
  - and in current users of estrogen and progesterone combination therapy compared to never/former users
  - There was an inverted U-shaped association between age and CBE sensitivity
Clinical Breast Examination

- **Canadian Study:**
  - Compared CBE Vs CBE + Mammogram.
  - No difference in outcome.
  - therefore CBE may avert some cancer deaths.

- **Self breast examination:**
  - No survival benefit.
Imaging

- Mammography
  - Screen
  - Symptomatic >40

- Ultrasound
  - All symptomatic
  - NOT screening tool
Mammography
Ultrasound
Mammogram

- Most sensitive in breast screening and early detection
  - Non-palpable micro calcifications (DCIS)
- Sensitivity 72.7%
- Specificity 59.1%
MMG: Problems

However problems arise

- Poor quality mmg/operator
- Low density / asymmetric lesions
- Non visible cancers
- Benign features
- Slow or no change in time
- Subtle signs
Problems

- May cause delay in diagnosis of early cancers
Ultrasound

- Better for detecting solid lesions
  - Sensitivity of 90%
  - Specificity 75%
- Better at detecting malignant c.f. benign
- Also useful in non-palpable micro calcifications (less than mmg)
Mmg + Us

- Can be used as complementary tools
Biopsy

- Fine needle aspiration
  - Freehand / Image guided
    - (Blue needle and 10ml syringe)
  - Smaller lesions
  - Cytological diagnosis (C1-C5)
FNAC

- No architectural information
- Poor sensitivity 51.3%
- High inadequate levels
- False positives in gynaecomastia
  - Atypical cells common
Core Biopsy

- Biopsy gun
- Full architecture of specimen
- High sensitivity 98.7%
  - Palpable lesions
- Image guidance not necessary
- Surgeons trained to do US-guided Bx
Triple Assessment

- Clinical Examination
- Imaging
  - Mammogram
  - Ultrasound
- Biopsy
  - FNAC
  - Core Biopsy
Triple Assessment

- One investigation sensitivity 65%.
- Two investigations sensitivity 85%.
  - Triple assessment:
    - specificity 100%.
    - sensitivity 95.5%.
Breast Diseases – Normal and Benign

- 1 in 10 women presenting to a breast clinic will have breast cancer
- 9 in 10 women presenting to a breast clinic will have a benign breast disorder
The Normal Breast

- Development
- Anatomy
  - Macroscopic
  - Microscopic
- Pregnancy and lactation
- Involution
Embryological Development

- Hormone Independent
- Mammary line [5-6 wks]
- Caudal end disappears [7-8 wks]
- Smooth muscle of nipple and areola [12-16 wks]
- Secretory apparatus from epithelial buds
Embryological Development

- Hormone Dependant
  - Sex hormones enter fetal circulation [20-32 wks]
  - Canalization of epithelial sprouts to form branching system
  - Enlargement of breast bud continues up to the first 2 weeks of life in approximately 60% of babies
Embryological Development

Primary bud  Secondary bud  Mammary pit  Lactiferous duct

6 weeks     12 weeks      Late fetus      Birth

(Gallager 1978)
Axillary nodes

Internal mammary chain
The Normal Breast Anatomy

- Skin and nipple
- Subcutaneous fat
- Fascia and connective tissue
  - interlobular = structural
  - intralobular (periductal/perilobular) = physiological
- Mammary fat
- Glandular tissue
Benign Breast Disorders
Classification

- ANDI
  Development - congenital
  - adolescent
  Cyclical - nodularity / mastalgia
  Involution - fibrocystic change
- Duct ectasia / periductal mastitis / abscess
- Conditions with well-defined aetiology, e.g.
  - Lactational abscess
  - Traumatic fat necrosis
- Epithelial hyperplasias
Benign Breast Diseases

- **Solid Lumps**
  - Fibroadenoma
Age at presentation

![Bar chart showing age distribution of patients.]

- 0-20: Approximately 20% of patients
- 21-30: Approximately 50% of patients
- 31-40: Approximately 20% of patients
- 41-50: Approximately 10% of patients
Size at presentation

- <1.0
- 1-1.9
- 2-2.9
- >=3

% patients

size cm
Natural History

- 2 year follow-up of 163 fibroadenomas
- 8% increase in size (1/2 <20 years)
- 55% no change
- 12% decrease in size
- 25% resolve
Other Benign Solid Lumps

- **Solid Lumps**
  - Fibroadenoma
  - Phyllodes
  - Hamartoma
  - Haematoma
  - Fat Necrosis
  - Radial Scar
  - Lipoma
Cystic lumps

- Cystic Lumps
  - Non-blood stained
  - Blood stained
  - Oily fluid
Inflammatory Conditions

- Infections
- Granulomatous
- Mastitis
- Systemic Conditions
- Implant Reaction
- Fat Necrosis
- Sarcoid
- Vasculitides
- Rheumatoid
- Diabetes
Granulomatous Lobular Mastitis
Infections of the Non-lactating Infection

- Periareolar
- Mammary Duct Fistula

Also Skin associated

- Cellulitis
- Infected sebaceous cysts
- Associated with hidradenitis
Mammary Duct Fistula

Commonly seen after

I & D of a non-lactational breast abscess

discharge of periareolar inflammatory mass

biopsy of periductal mastitis

Px- surgical

opening up the fistula tract & granulate

excision of fistula/ close wound primarily under a/biotic c

Mammary Duct Fistula Surgery
Infections of the Lactating Breast

Overlying skin

- Normal
  - Aspirate & antibiotics
  - Repeat aspiration

- Thinned or Necrotic
  - I & D, antibiotics
  - Pack cavity if large

*Abscess, Failure to respond to antibiotics or systemic symptoms

Management

Aspiration of Breast Abscess

Mondor’s sign
Mastalgia

- Commonest reason for breast related GP consultation.
  - 45% – 80%.
- Benign.
- Uncommon symptom of cancer.
- Does not exclude cancer.
Early Ca and Mastalgia

- When mastalgia alone and ca.
  - Pain unilateral, persistent and non positional.
  - Smaller tumours.
  - 5% – 24%.
Benign Mastalgia

- Cyclical
- Non cyclical
Cyclical Mastalgia

- 40% of breast pain consultation.
- Definite relationship to menstrual cycle.
- Always premenstrual.
- Last 1 – 4 weeks.
- Nodularity present.
- Maximal in UOQ.
Cyclical Mastalgia.

- Not symptom of cancer.
- Mammogram not helpful.
- Best diagnosed with pain chart.
  - Gives duration and intensity.
  - Difficult to differentiate normal from abnormal.
Aetiology - Cyclical Mastalgia.

- Water retention:
  - No scientific evidence
Aetiology

- Endocrine abnormalities:
  - Increased oestrogen
    - No evidence
  - Deficient progesterone at luteal phase
    - French study 1979
    - Not proven by others
Aetiology

- Conclusion:
  - No significant differences in basal levels of ovarian steroids and gonadotrophins.
Aetiology

- Prolactin
  - Noted as a separate hormone in 1970
  - No difference in basal levels
  - Diurnal hormone
  - Significant response to TRH compared to control
Aetiology

- Prolactin:
- Hypothalamic disturbance in cyclical mastalgia
- `Fine tuning` defect may be the primary problem
Management

- Reassurance
  - Most important
  - 85% of mild to moderate pain
Management

- OCP
  - Pill protective against BBD
  - No real evidence against stopping OCP
Management

- Diuretics
  - No evidence

- Bromocriptine
  - Dopamine agonist
  - Prolactin lowering agent
  - Significant reduction in cyclical mastalgia
Bromocriptine

- Severe side effects limit use
  - Nausea, vomiting and dizziness
Management

- Step ladder of treatment
  - EPO
  - Danazol
  - LHRH analogue (Zoladex)
Fatty acid deficiency hypothesis
60% success
Mild cases only
Virtually no side effects
Danazol

- 80% success
- Acts on the pituitary-ovarian axis
- Exact mechanism complex
- Significant side effects
  - Wt gain
  - 14% masculanisation (some irreversible)
Zoladex

- 100% success
- Complete reversible menopause
- Useful in diagnosis and treatment.
Non Cyclical Mastalgia

- Not related to menstrual cycle
- Can be divided into true non-cyclical and musculoskeletal (inc. Tietze syndrome) breast pain
- Drug therapy only effective 40%
Non cyclical mastalgia

- Paper by Khan et al Nottingham
- Vast majority of non cyclical mastalgia
  - Rib tenderness
  - Single spot or diffuse
  - Termed lateral chest wall tenderness
Lateral Chest Wall Tenderness

- **Aetiology unknown:**
  - Speculation similar pathology to tennis elbow
  - Anecdotual correlation with RA
- **Diagnosis clinical**
  - Focal rib tenderness (majority)
  - Diffuse unilateral or bilateral rib tenderness (few)
  - No specific breast tenderness
Lateral Chest Wall Tenderness

- **Management**
  - Not responsive to stepladder (40%)
  - 138 women treated to injection therapy to the site of maximal tenderness
    - Injection: 1ml 40mg of depomedrone + 1ml 2% Lignocaine
Management

- 38 women who declined were treated with routine medications
Management

- At 12 week assessment
  - 83% of injected cases were successful
  - 16% recurred and were successfully re-injected
  - 44% of non-injected cases were pain free
  - No side effects of injected cases noted
Conclusion

Managing mastalgia:

- Cyclical
  - Step ladder
- Non-cyclical
  - Injection with steroid and local anaesthetic
Treatment of Primary Breast Cancer

- Breast cancer most common cancer in women
- 1 in 8
Tumour parameters

- **Prognostic factors**
  - Size
  - Grade 1-3
  - Ln status (stage 1-3)
    - STRONGEST PROGNOSTIC FACTOR
  - LVI

- **Predictive factors**
  - ER / PR / HER2
Prognostic index

- NPI
  - Grade + Stage + 0.2XSize (cm)

- TNM classification
NPI

- <2.4 Excellent prognostic Group
  - No survival difference
- <3.4 Good PG
  - 89-93%
- 3.4 – 5.4 Moderate PG
  - 60 -80%
- >5.4 – Poor PG
  - 30%
Treatment Objectives

- Cure
- Survival
- Local control
- Systemic control
- Cosmetic, social and psychological consequences of dx and rxt
Cure

- Extremely difficult to state
  - Late recurrences
- Epidemiological studies:
  - Breast cancer dx rate minus death rate
  - 20 – 30%
- Decreased death rate due to adjuvant therapy
Local treatment

- Local treatment important in terms of survival.
- Micrometastases common in many.
Local Control

- Influenced by local treatment
- Influenced by systemic therapy
  - DXT decreases by 70%
  - Systemic treatment decreases by 30%
Local treatment

- Breast conservative surgery and DXT
- OR
- Mastectomy +/- DXT
- Patient choice
  - No survival difference
  - Milan Trial
Patient choice

- Important
- Patients offered choice had reduced levels of anxiety and depression
Psychological Morbidity

- Cosmesis Vs anxiety.
- Conservative treatment:
  - Better body image but higher anxiety.
- Mastectomy:
  - Less anxiety but increased depression due to poor body image.
Regional therapy

- Axillary stage with SLNB
- Full clearance if +ve

OR

- DXT to axilla
Systemic therapy

- Endocrine therapy if ER+ve
  - SERM (Tamoxifen)
  - AI
- Chemotherapy
  - Anthracyclines
  - Taxane
Systemic therapy

- Biological (HER2 +ve – 15%)
  - Herceptin
  - Monoclonal Ab to HER2 receptor

- Other new therapies
  - VEGF Aabs
  - PARP inhibitors
  - Tyrosine kinase inhibitors
Overview of systemic treatment

- Dependent on prognostic group and ER/PR/HER2 status
- Good – endocrine only if ER+ve
- Moderate – discuss chemo if ER +ve and chemo if ER –ve
- Poor – chemo and endocrine if ER+ve
- Herceptin and chemo if HER2 +ve