BISI – Indian Breast Imaging Certification

Syllabus for Diploma in Breast Imaging

- Breast anatomy and physiology:
  - Embryology
  - Anatomy and physiology of the breast, axilla and associated structures in relation with age, hormonal status, pregnancy and lactation.

- Epidemiology:
  - Risk factors for developing breast cancer. Family history and genetic predisposition and other risk factors
  - Understanding risk and risk stratification.
  - Screening strategies for moderate, high and very high risk of breast cancer.
  - Genetic testing and counselling.
  - Breast cancer incidence and mortality, survival rates.
  - Evidence based rationale for screening and screening tests.

- Clinical presentation:
  Understanding the clinical presentation of benign and malignant disease: breast pain, breast nodularity and thickening, nipple discharge, breast mass, axillary mass, breast erythema, skin thickening and tethering

- Histopathology:
  - Benign Breast diseases: fibrocystic change, fibroadenomas, fat necrosis, usual ductal hyperplasia, columnar cell change without atypia, PASH
  - Male breast pathologies
  - High risk lesions: ADH, LCIS, FEA, radial scar, fibroepithelial lesions, etc
  - DCIS and histological subtypes
  - Invasive ductal, invasive lobular breast cancer and subtypes including papillary, medullary, mucinous and tubular
  - Multifocal and multicentric carcinoma, pathological staging
  - Inflammatory breast cancer, Paget's disease and locally advanced breast cancer
  - Others Malignant: Sarcoma, lymphoma, metastasis, metaplastic carcinoma, leukaemia
  - Benign disease : Mastitis, abscess/sepsis, atypical infection - TB, granulomatous mastitis, diabetic mastopathy
  - Margin analysis for specimens

- Radiological-pathological correlations

- Mammography
  1. Equipment and techniques:
  - To understand the physical principles, techniques, indications and limitations of digital mammography.
  - Screen-film mammography versus digital mammography
  - Digital breast tomosynthesis (DBT), reconstructions of 2-dimensional mammograms from DBT datasets and contrast-enhanced mammography
  - AERB guidelines for mammographic equipment and radiation protection issues.
  - Mammography quality assurance
  2. Positioning:
  - CC and MLO views and additional mammographic views
  - Positioning for women with implants
  - Rationale for breast compression
  - Image assessment for proper breast positioning, compression, exposure, contrast, sharpness and noise.
  3. Mammographic interpretation:
  - Optimal viewing conditions
  - Recognizing normal mammographic anatomy
  - Recognizing mammographic features of benign and suspicious breast masses
  - Recognizing mammographic features of subtle abnormalities like architectural distortions, asymmetries and micro-calcifications Post-surgical changes in mammogram
  - Principles, methods, strengths and pitfalls of computer-aided detection(CAD) and double reading
  4. Screening mammography:
  - Relative screening efficacy of clinical breast exam, breast self-examination and mammography
  - Role of breast density in screening mammography
  - Benefit-risk assessment, radiation risk and false positives
  - Screening guidelines
  5. Diagnostic mammography:
  - Triangulation of breast lesions
  - Correlation of clinical and imaging findings
  - Workup of lesions seen in one view
  - Assessment of extent of disease for suspicious or known malignant lesions

- Breast ultrasonography:
  - Equipment and physics
  - Role of Doppler in assessment of breast lesions
  - Role of elastography in breast lesion assessment
  - Recognizing normal sonographic anatomy
  - Evaluation of cystic masses and differentiating simple cysts, complicated cysts and complex cysts
  - Differential features of benign and malignant solid masses
  - Correlation of sonographic findings with mammography and clinical breast examination
  - Limitations of ultrasound and controversies regarding screening whole-breast ultrasound examination

- Breast MRI
  - Physics, sequences, DWI, artefacts, pitfalls and protocols
  - Indications and contraindications
  - Recognizing benign and malignant pathology on MR.
  - MR interpretation of enhancing and non-enhancing lesions.
  - Breast implants.
  - Second look US.
  - Radiomics and spectroscopy

- PET CT: uses in breast cancer

- Sentinel node localization and biopsy

- Reporting and medicolegal aspects:
  - Demonstrate proficiency in producing breast imaging reports using ACR BIRADS mammography, ultrasound, MRI and CEM lexicon
  - Lesion localization
  - Categorization of breast composition
  - Final assessment categories
  - Management recommendations
  - Concordance between lesion descriptors and assessment categories
  - Concordance between assessment categories and management recommendations
  - Medico-legal aspects of breast imaging and interventions

- Informed consent for invasive procedures

- Breast interventions:

Principles, indications and contraindications, equipment, preparation, technique, advantages, disadvantages, accuracy and auditing for,

- Ultrasound guided aspirations
- Ultrasound/ stereotactic/ MRI guided wire localizations
- Ultrasound/ stereotactic/ MRI guided marker placement
- Ultrasound/ stereotactic/ MRI guided core biopsy/ Vacuum Assisted Biopsy

- Management and treatment
- Staging breast cancer at initial presentation: Unifocal, multifocal and multicentric disease. Staging the axilla. Imaging strategies and treatment implications
- Evaluation and management of patients with occult breast cancer
- Biomolecular subtypes of breast cancer, imaging and therapeutic implications
- Neoadjuvant chemotherapy: Understanding response to treatment on different imaging modality and surgical options according to initial presentation and response.
- Surgical management of the breast: Management of unifocal, multifocal and multicentric disease. Breast conservation and mastectomy. Oncoplastic surgery. Breast reconstruction, implant and flap based. . Risk reducing surgery
- Surgical management of the axilla
- Radiotherapy: intra operative and postoperative. Total and partial breast irradiation.
- Adjuvant chemotherapy, hormone treatment and chemoprevention. Understanding Predict and Oncotype DX
- Non-surgical management : Patients with co-morbidities and elderly patients with breast cancer
- The MDT in Breast Cancer
- B3 high risk lesions: Indications for VAE and surgical excision
- Genomics
- Imaging guided therapeutic options: Laser, cryotherapy, radio frequency ablation, etc.