Palpable breast lump in patient 40 years of age or above

MMG +/- spot compression or digital breast tomosynthesis over palpable findings

- Suspicious or malignant findings (BIRADS 4 or 5)
- Mass with probably benign features (BIRADS 3)
- Negative (BIRADS 1)
- Specific benign finding e.g. lymph node (BIRADS 2)
- Only fatty tissue in palpable area

**US**

- Suspicious or malignant mass (BIRADS 4 or 5)
- Mass with probably benign features (BIRADS 3)
- US Negative
- Specific benign features (BIRADS 2)

**Further investigation:**
- Cytological &/or histological
- Initial short term follow up vs further investigation: cytological &/or histological
- BIRADS 3 (based on MMG)
- Symptomatic e.g. simple cyst
  - +/- Aspiration
  - Otherwise asymptomatic e.g. lymph node
  - Stop

**BIRADS 1**
- Based on MMG
- Clinical review
- US for biopsy planning & to evaluate extent of disease

**BIRADS 3**
- Based on MMG
- Initial short term follow up vs further investigation: cytological &/or histological

**BIRADS 2**
- Stop
Palpable breast lump in patient under 40 years of age

**US**

- **Specific benign findings (BIRADS 2)**
  - Symptomatic e.g. simple cyst
    - Aspiration
  - Otherwise asymptomatic e.g. lymph node
    - Stop

- **Solid mass with probably benign features**
  - Initial short term follow-up vs further investigation: cytological &/or histological
  - +/- MMG

- **Negative**
  - Base on clinical suspicion

- **Suspicious or malignant finding (BIRADS 4 or 5)**
  - Further investigation: MMG/MRI, cytological &/or histological

**Negative**

- Specific benign finding (e.g. degenerating fibroadenoma)
  - Clinical review

- Mass with probably benign features (BIRADS 3)
  - Initial short term follow-up vs further investigation: cytological &/or histological

- Suspicious or malignant findings (BIRADS 4 or 5)
  - Further investigation: cytological &/or histological
BR 1 Palpable breast lump

REMARKS

1. General
   1.1 Less than 7% of breast cancers occur in women under 40 years of age.\textsuperscript{3}
   1.2 Risk factors for breast cancer are\textsuperscript{4, 5, 8}:
      1.2.1 Major risk factors: BRCA1 or BRCA2 mutation
          first degree relative with a BRCA1 or BRCA2 mutation
          history of radiation to the chest between the age of 10
          and 30
          certain clinical syndromes e.g. Li-Fraumeni syndrome
      1.2.2 Minor risk factors: history of lobular carcinoma in-situ or atypical lobular
          hyperplasia
          history of atypical ductal hyperplasia
          history of breast cancer including ductal carcinoma in-situ
          very dense breasts
          hormonal replacement therapy
          more menstrual cycles
          nulliparity or late age at first live birth
          obesity
          never breastfed
          alcohol consumption

2. Mammography (MMG)
   2.1 Diagnostic MMG is the initial exam for evaluating a palpable mass for women aged
   40 or older. Because of increased radiation risk, lower sensitivity of MMG, and lower
   incidence of breast cancer in younger women, US is therefore the initial imaging
   modality in younger women.\textsuperscript{9}
   2.2 A negative MMG does not exclude breast cancer.\textsuperscript{6}
   2.3 Low-dose radiation increases breast cancer risk among high-risk women especially at
   a younger age.\textsuperscript{8}
   2.4 The risk of developing breast cancer from radiation exposure secondary to MMG in
   women under the age of 35 is estimated to be 7 excess cancers per million women per
   year per rad.\textsuperscript{7}

3. US
   3.1 US is useful in avoiding unnecessary biopsy of cysts.\textsuperscript{7}
   3.2 US is helpful in differentiating benign from malignant solid masses but tumours like
   medullary and colloid carcinoma may look benign sonographically.\textsuperscript{3}
   3.3 For evaluation of a palpable mass, US is the modality of choice for women under age of
   30 and can also be used as the first line investigation for women aged 30 to 39 years.\textsuperscript{9}

4. MRI
   4.1 MRI may be useful for evaluating the extent of biopsy proven breast malignancy in
   glandular tissue. Otherwise it is less cost-effective than MMG and US as the initial
   imaging examinations for evaluating palpable mass.\textsuperscript{9}
5. **Pathological diagnosis**

5.1 If a palpable mass is not visible by either MMG or US, the lesion should be assumed to be solid, and biopsy should be considered if the clinical findings are suspicious of malignancy.  

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**REFERENCES**