ROSE in EUS guided FNA of Pancreatic Lesions

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Cervical Cytology 57,500 (decreases 8-10%/year)
Diagnostic Cytology 10,500 of which 30% FNA (increases 5%/year)
FNA clinic managed by cytopathologist terminated
Most FNA by U/S, EUS, EBUS, few by CT
600 EUS/EBUS in 2017
The rest done by clinicians in the Rapid access clinics (Head&Neck, Thyroid, Breast, Lymphnodes)
No of FNA cases
Pancreatic Mass: Solid or Cystic?

- **Solid Pancreatic masses**
  - Ductal Adenocarcinoma
    - typical
    - variant
  - Chronic Pancreatitis
  - Acinar Cell Carcinoma
  - Pancreatic Endocrine Tumour (PNET)
  - Pancreatoblastoma

- **Cystic pancreatic masses**
  - Pseudocyst
  - Serous Cystadenoma
  - Solid pseudopapillary tumour
  - Mucinous cyst
    - MCN
    - IPMN
Handling of ROSE samples: the BMS

- Direct air dried Diff Quick smears
- Assess whether there is material
- If yes, is it representative of the intended site?
- Is there contamination? (depends on Pathway of site)
- HOP(duodenal), TOP (gastric), Hilum (liver), adrenal, mesothelial
- Is it a solid or cystic mass?
**Role of the BMS**

- Check **Clinical Details**
- Liaise *with* endoscopist * regarding *the query*
- Check *whether* representative
- Suggest *further*......... studies (*?lymphoma for Flow Cytometry*)
- If atypical cells present, ask for **dedicated pass** in **LBC**
Adenocarcinoma
Difficult Differential Diagnosis: Reactive ductal atypia in chronic pancreatitis vs. better differentiated adenocarcinoma
BSCC Code of Practice--Fine Needle Aspiration Cytology.

• FNA cytology has been shown to be a cost-effective, reliable technique its accurate interpretation depends on obtaining adequately cellular samples prepared to a high standard.

• Its accuracy and cost-effectiveness can be seriously compromised by inadequate samples
• Cytopathologists, Radiologists, Nurses or Clinicians may take FNAs, they must be adequately trained, experienced and subject to regular audit.

• The best results are obtained:
  - when a pathologist or an experienced & trained Biomedical Scientist (cytotechnologist) provides immediate on-site assessment of sample adequacy &
  - whether or not the FNA requires image-guidance.
EUS-guided FNA for diagnosis of solid pancreatic neoplasms: A meta-analysis  GIE 2012

- 33 studies, 12 retrospective, 21 prospective
- 4,984 patients
- Sensitivity for malignancy 85-91%
- Specificity “ “ 94-98%
- PPV 98-99%
- NPV 65-72%
EUS-guided FNA for diagnosis of solid pancreatic neoplasms

- **False** -\textbf{VE} results up to 20-40 %

- **False** +\textbf{ive} very rare
Optimizing **Diagnostic yield** from EUS-FNA.
Cytopathology June 2013

- ROSE increases diagnostic sensitivity & accuracy of FNA for solid pancreatic masses by up to 10-15%

- Meta-analysis of 34 studies with 3644 patients:
  ROSE: p=0.001 for accuracy
Costs

• 1 EUS procedure = 1 hour (45’+15’)

• 1 session/week of a cytopathologist (3.5 hours=£9700 gross/year)

• 1 session/week of a BMS gr7 = £2700
BMS Training Course **in CT/US** guided FNA Cytology
Imperial College NHS Trust,
Dept. of Cellular Pathology

• **Aim of the course:**
  - Provide training to senior cytology BMSs in order to assist Radiologists and clinicians in the evaluation of cytological material obtained through CT/US guided FNAs including EUS and EBUS procedures
  - Maximize the **potential of cytological material** for diagnostic **ancillary techniques & research protocols**
The course will run in 3 hour sessions on Tuesday morning (half day) from 10.00 to 13.00 on a weekly basis including lectures by BMSs, cytopathologists, radiologists and clinicians

March 11, 9 am - Cytology of respiratory tract
Dr Onn Kon - Indications and Clinical setting
Dr C Wright - EBUS

March 18, 10 am - Cytology of respiratory tract
Dr F Mauri – Lung Pathology
Dr F Mauri - Cytology and ancillary techniques

March 26, 14.00 – 14.45 Lung and Thyroid
Dr N Strickland - CT guided FNA
Dr R Dina – Thyroid Cytology and ancillary techniques

April 1, 10 am - FNA of Thyroid
Mr F Palazzo - Clinical setting
Dr M Crofton - - US guided FNA of thyroid nodules

April 8, 10 am - FNA of pancreas and cytology of biliary tract
Dr P Vlavianos - Clinical setting
Dr R Dina - Cytology and ancillary techniques

April 15, 10 am – FNA of head and neck
Dr A Sandison - Clinical setting and Pathology
Dr D Blunt - US guided FNA of head and neck
Dr R Dina – Head and neck cytology

May – Assessment and Evaluation
Current setting

• All U/S-guided FNAs at HH if ROSE requested are attended by a senior BMS gr7

• All U/S-guided FNAs at SMH smeared by the Radiologists (trained)

• All EUS-guided FNAs attended by a BMS gr7

• EBUS-guided FNAs attended by a BMS if granulomas suspected (TB or sarcoid),

• But by a cytopathologist if cancer suspicion/staging
230 specimens (218 patients) were obtained from:

- pancreas (114), **lymph node** (64), **submucosal lesions of the GI tract** (27), liver (8), and miscellaneous (17) sites.
- The results were classified as **informative (77.8%)** and **non-informative (NI) (22.2%)**.

The **NI rate was significantly high, when a cytopathologist was absent** (\( P = .0008 \))
A total of 48 patients with solid pancreatic lesions were evaluated. The proportions of adequate samples were 48/48 (100%) for FNA and 45/48 (93.7%) for core biopsy (P = .24). The diagnostic yield was 42/48 (87.5%) and 33/48 (68.7%) for FNA and CNB respectively (P = .046). The incremental increase in diagnostic yield by combining both methods was 2/48 (4%).

The diagnostic yield for malignancy was 30/32 (93.7%) for FNA and 23/32 (71.8%) for CNB (P = .043).

The sensitivity for the diagnosis of malignancy for: FNA 90.6% and CNB were 69%, (P = .045).
The search produced 3822 original studies, of which 70 studies met our inclusion criteria. The overall average adequacy rate was 96.2% (95% confidence interval: 95.5, 96.9).

ROSE was associated with a statistically significant improvement of up to 3.5% in adequacy rates. There was heterogeneity in adequacy rates across all subgroups. No association between the assessor type and adequacy rates was found.

Studies with ROSE have high per-case adequacy and a relatively high number of needle passes in contrast to non-ROSE studies.
Causes of discordance between Cytology & Histology in pancreatic lesions: the experience at Imperial College NHS Trust.
M. El Shiek, R.Dina

- All pancreatic FNA cytology specimens performed in our department from 2013 to 2016 with corresponding subsequent surgical specimens were identified.
- For each case the reported cytological category was recorded (C1 – inadequate, C2 – benign, C3 – atypical; mucinous lesions, endocrine lesions, C4–suspicious for malignancy, C5–malignant).
- The final surgical diagnosis was recorded. Discordant cases (benign histo vs C4,C5 cytology or malignant histo vs C2,C3 cytology), were retrieved from filing archives and reviewed by a cytopathologist blinded to the previous results. The cytological categories on review were compared to those originally reported.
Causes of discordance between cytology and histology in pancreatic lesions: the experience at Imperial College NHS Trust.
M. El Shiek, R.Dina

- A total of **75 cytology specimens** with corresponding surgical specimens were identified.
- A total of **17 cases (22.6%)** were discordant.
- **Six out of 14** reviewed cases were confirmed to be correctly categorised (**42.8%**), the discordance due to nonrepresentative sampling.
- Remaining **eight cases (67.2%)**, 2 were interpreted as inadequate (C1) while 6 were given a different cytological category on review which was at most one tier above or below the original cytological **diagnosis**.
THANKS