The 5-year Oxford Experience of Paediatric Ultrasound-guided Percutaneous Biopsies

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Background
Children with cancer require histological diagnosis to guide appropriate therapy. This can be performed by open surgical or percutaneous image guided biopsy.

Aim
The aim of this study was to assess the diagnostic accuracy and safety of percutaneous ultrasound guided paediatric biopsies in our tertiary referral centre.

Methods
A retrospective analysis (between January 2010 and December 2015) of clinical data related to percutaneous ultrasound-guided biopsies performed for histological diagnosis in patients aged 0 to 18 years old in a tertiary paediatric hospital was conducted. A total of 113 percutaneous US-guided biopsies were performed in 110 children comprising 62 males and 48 females. The median age of the children was 5.7 years. A primary diagnosis was made in 109 patients with suspected recurrence in 4 cases. Most biopsies were performed using 18-gauge core biopsy needles with a minimum of 2 cores per examination under general anaesthesia.

Results
In 99% of lesions the needle biopsy was diagnostic with only one case having insufficient material for making a full diagnosis. There were 82 malignant and 31 benign lesions with 49% localised, 19% locoregional and the remainder metastatic.

An accurate diagnosis could be confirmed in all except one of the percutaneous biopsies for those with suspected malignancy or recurrence against surgical specimen. In the one case of non-diagnosis, the diagnosis was made on subsequent surgical removal and histopathology. Most patients underwent additional procedures alongside their biopsy e.g. Hickman line insertion and bone marrow aspiration. The majority of cases were either done as a day case (n=34) or requiring an overnight stay (n=50). The remainder of cases were performed either as part of a planned admission or in patients undergoing other treatment.

The minor complications were mainly related to the general anaesthesia or other procedures including pain and nausea/vomiting. One case required urgent laparotomy for bleeding after ultrasound post-biopsy demonstrated bleeding of the tumour. This patient had pre-operative ascites, a risk factor for bleeding.

Conclusion
The use of US-guided percutaneous biopsy is an accurate and safe method for evaluation of suspected lesions in the paediatric population. This can be performed instead of or in addition to open biopsy and help guide subsequent treatment.