ABSTRACT

Objective

To determine the effectiveness of the cell block technique for immunocytochemical diagnosis by comparing cytomorphologic preservation and immunocytochemistry (ICC) stains in paired cell block and conventional fine needle aspiration (FNA) samples.

Study Design

This was a prospective study. Material for both conventional smears and cell blocks were collected simultaneously during fine needle aspiration of 50 lesions comprising lymph node, lung and liver masses. Grading of cellularity, morphological preservation, architectural preservation, immunocytochemical staining intensity and presence of background staining were compared on paired FNA smears and cell block samples derived from the same case. Each arm of the paired analysis was performed blindly without knowledge of the grading outcome of the other. The Kappa statistic (K) was used to measure inter-rater agreement.

Results

The fifty samples evaluated included FNAs from the lung, 24/50 (48%); liver, 23/50 (46%) and lymph node, 3/50 (6%). The immunocytochemistry stains consisted of 44/50 (88%) CK7, 44/50 (88%) CK20, 18/50 (36%) TTF1, 10/50 (20%) synaptophysin, 10/50 (20%) Hepar-1 and 7/50 (14%) AE1/3. There was no overall agreement in preservation of cytomorphological detail and ICC staining between the two methods. The Papanicolaou stained conventional FNA smears fared better then cell block for the

evaluation of nuclear and cytomorphologic characteristics; cells in the cell block were poorly preserved in many cases. The ICC stains worked better on the cell block samples due to lack of background and aberrant staining.

Conclusion

Conventional FNA smears and cell blocks complement each other. Our results indicate that it would be optimal to use both modalities in the diagnostic work-up of mass lesions amenable to FNA diagnosis; the former to assess morphology, and the latter for optimal immunocytochemistry results. In resource constrained settings, the cost implications of performing both conventional and blocked smears on all FNA material warrants further evaluation.

Keywords: cell block, FNA smears, immunocytochemistry, cytomorphology