directional sequencing (SBS) has been used as the gold standard for EGFR mutational analysis, however there are emerging new assays utilizing targeted real time PCR technology. In this study we compared the performance of 'Cobas 4800' (COBAS) against Sanger sequencing.

Methods: 480 consecutive formalin fixed paraffin embedded samples of lung adenocarcinoma were simultaneously tested for EGFR mutations by SBS and COBAS. Mutational results were categorised as positive, negative and invalid. Unweighted Kappa test was utilised to compare the concordance between two assays.

Results: After exclusion of invalid results ($n=16$), 477 samples from 458 patients (47.2% male, 52.8% female) underwent statistical analysis. There was an excellent observed percentage agreement of 98.3% (kappa value 0.944, SE 0.0194) between the two methods. The combined mutation detection rate (19%) was superior to either SBS (18.4%) or COBAS (18%). EGFR mutation frequency was significantly higher in women (23%) compare to men (12%).

Discussion: COBAS assay is a diagnostically robust platform comparable with Sanger with very high analytical sensitivity and short turns around time. COBAS failure is due to lower sensitivity to samples with low DNA quality and its limited primer detection range, while Sanger is mostly affected by its lower analytic sensitivity related to low volume of diagnostic material. Consequently, the higher combined mutation detection rate necessitates a dual testing strategy to guarantee detection of novel mutations and mutations outside the COBAS detection range, and avoiding false negative results due to lower analytical sensitivity of SBS.

78. MOLECULAR PROFILING STUDY OF A RECURRENT OVARIAN MUCINOUS TUMOUR WITH A MURAL NODULE OF ANAPLASTIC CARCINOMA, PROVIDING SUPPORTIVE EVIDENCE OF DEDIFFERENTIATION

Nima Mesbah Ardakani¹, Anup Naran²,
Fabienne Grieu-Iacopetta¹, Colin Stewart²

¹Anatomical Pathology Department, PathWest, QEII, and

²Anatomical Pathology Department, PathWest, KEMH, Perth, Australia

Background: Malignant mural nodule in ovarian mucinous tumours is an exceedingly rare occurrence. The mural nodules can be of sarcomatous or carcinomatous differentiation; however it is not clear if this is a result of dedifferentiation in the mucinous tumour or simply a collision phenomenon.

Clinical data: A 38-year-old woman presented with a 21 cm right ovarian cystic mass, which was resected surgically. The patient had a previous right ovarian cystectomy 7 years ago with a diagnosis of low-grade borderline mucinous tumour.

Pathological findings: Grossly there was a necrotic cystic mass weighting 547 g with thickened wall containing a focal mural nodule up to 2 cm in diameter. Microscopic examination revealed an infarcted cystic lesion with ghost outlines of multi-layered polygonal cells and viable fibrous stroma with lakes of extruded mucin, which were overall interpreted as a recurrent unclassifiable mucinous neoplasm. The mural nodule was composed of viable anaplastic rhabdoid cells with pleomorphic nuclei, eosinophilic cytoplasm and occasional mitotic figures. Immunophenotypically the rhabdoid cells showed strong cyto-keratin positivity in keeping with anaplastic carcinoma. The

previous cystectomy specimen was reviewed which showed features of a borderline mucinous tumour.

Molecular analysis: Appropriate formalin fixed paraffin embedded sections of the anaplastic carcinoma and previously resected mucinous tumour were micro-dissected and DNA was extracted for next generation sequencing. Gene profiling showed a similar K-RAS mutation (c.35 G>T; p.Gly12Val) in both anaplastic carcinoma and previous borderline mucinous tumour.

Discussion and conclusion: Finding of a similar K-RAS mutation in both viable anaplastic carcinoma and previously resected mucinous tumour is a supportive evidence for a recurrence, and that the nodule of anaplastic carcinoma likely to represent a dedifferentiation phenomenon in same clonal neoplastic cells rather than a collision tumour.

79. EXPRESSION OF PROTEIN REGENERATING LIVER-3 (PRL-3) AND E-CADHERIN IN COLORECTAL CANCER

Upik Anderiani Miskad, Muhammad Husni Cangara,
Syarifuddin Wahid

Department of Pathology, Faculty of Medicine, Hasanuddin University, Makassar, Indonesia

Background: Colorectal cancer is the third most common malignant neoplasm worldwide. PRL-3 (phosphatase of regenerating liver-3/PTP4A3) was reported participates in the progression of colorectal cancer and play a role in epithelial to mesenchymal transition by down regulate the expression of E- cadherin.

Aims: To clarify the molecular mechanisms that involved in colorectal cancer development and progression, we investigate the expression of PRL-3 and E-Cadherin in colorectal cancer and correlate the expression with the clinicopathologic parameters.

Methods: Expression of PRL-3 and E-Cadherin in 76 colorectal cancer specimens were detected by immunohistochemistry.

Results: Among colorectal cancer specimens examined, there were 30 (39.5%) well differentiated, 36 (47.4%) moderately differentiated and 10 (13.2%) poorly differentiated CRC. There were significant correlation between histological grading and PRL-3 expression ($p=0.044$), and also with E-cadherin expression ($p=0.039$). The expression of PRL-3 was significantly correlated the expression of E cadherin in colorectal cancer ($p=0.003$). The result showed that the more higher PRL-3 expression the more lower the expression of E-cadherin in colorectal cancer.

Conclusions: These studies strongly suggest that PRL-3 may play a role to down regulate the expression of E cadherin in the development and progression of colorectal cancer.

80. COLORECTAL ADENOCARCINOMA WITH THE SERRATED NEOPLASIA PATHWAY

Renn Montgomery, Tao Yang

Department of Anatomical Pathology, Liverpool Hospital, Liverpool, NSW, Australia

The conventional pathway for the development of colorectal carcinoma (CRC) has been well described, and involves mutations in the APC gene, as well as alterations in p53 and the development of microsatellite instability. A more recently described pathway implicates sessile serrated lesions in the