**WILMS TUMOUR GENE 1 (WT1) MUTATIONS IN ACUTE MYELOID LEUKEMIA (AML)**

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**Background:** The role of WT1 mutations in the pathogenesis of AML is unclear but there is evidence to suggest they are associated with a poor prognosis and response to treatment. We show that screening for WT1 mutations is feasible in a diagnostic laboratory and aim to correlate the WT1 mutations with clinical characteristics, morphology, karyotype, other genetic mutations, response to treatment and survival.

**Method:** Mutations in exons 7 and 9 of the WT1 gene were detected by fragment analysis. To confirm the results, 20 samples were re-tested by Sanger sequencing and next generation sequencing.

**Results:** Three out of 50 AML patients were positive for mutations in exon 7. All 3 patients had normal karyotype and treated with induction chemotherapy 7+3 and HDAC consolidation. Patient 1 survived 12 months and died of relapsed AML. Patient 2 had an allogeneic stem cell transplant at 2nd CR but died from severe GVHD 14 months from diagnosis. Patient 3 is still alive at 12 months having had an allogeneic stem cell transplant in 1st CR.

**Conclusion:** WT1 mutation detection is feasible in the routine diagnostic setting. In our cohort they are associated with a poor prognosis, but further studies are still required.

**THE INCIDENCE, CLINICAL AND PROGNOSTIC SIGNIFICANCE OF PLASMA CELL DYSCRASIAS WITH ABBERRANT CD4 AND/OR CD8 EXPRESSION**

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**Aim:** To determine: (a) the proportion of patients diagnosed with plasma cell dyscrasias at our institution who had CD4 and/or CD8 expressing plasma cells by flow cytometry, and (b) any association between this aberrant phenotype and clinical and prognostic factors.

**Method:** We interrogated our pathology database to identify patients with a plasma cell dyscrasia diagnosed between 2008–2014, with plasma cells detected by flow cytometry of bone marrow. These patients’ records were reviewed to determine if their plasma cells expressed CD4 and/or CD8, which was assessed against relevant prognostic and clinical factors.

**Results:** 74 specimens were evaluable, of which 17 (23%) were CD4 positive. No cases were CD8 positive. The age and sex of CD4 positive and negative patients were comparable. There was a significant association of CD4 positivity with plasma cell myeloma, particularly relapsed disease; ISS stage II or III; higher LDH level; and high risk by combined karyotyping and FISH analysis. There was also a trend towards higher marrow plasma cell burden.

**Conclusion:** CD4 positivity is associated with higher risk disease and factors associated with a poor prognosis. It is unclear whether CD4 status is a useful prognostic or predictive factor or represents clonal evolution of plasma cells.

**FULL BLOOD COUNT – INTERNAL QC PROTOCOL, A REVIEW BY THE RCPAQAP HEMATOLOGY**

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**Aim:** The RCPAQAP Haematology has undertaken an exercise to review the internal quality control protocol for FBC instrumentation as well as review the action taken by laboratories when non-conforming results are evident in the RCPAQAP proficiency testing reports.

**Method:** A questionnaire was sent to laboratories enrolled in the RCPAQAP FBC module. Laboratories were asked to provide
MATERNAL FOLLICULAR LYMPHOMA PRESENTING WITH MULTIPLE ANEUPLOIDY ON NONINVASIVE PREGNATAL TESTING

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Introduction: Noninvasive prenatal testing (NIPT) using parallel sequencing of cell-free DNA from maternal blood is increasingly used in obstetrics as screening for fetal aneuploidy. We describe a case of positive NIPT related to maternal lymphoma.

Case description: A 41-year-old female underwent Verifi prenatal testing at 10 weeks gestation, which detected chromosomes 18 and 21 trisomy. Chorionic villus sampling (CVS) reported discordant results with normal fetal karyotype (46 XY), and subsequent 12-week fetal ultrasound did not detect morphological abnormalities. She did not have B symptoms, but had 2 cm palpable lymphadenopathy in the left axilla, right cervical and supraclavicular regions. Exccisional biopsy of cervical node was consistent with follicular lymphoma. Cytoge
but had 2 cm palpable lymphadenopathy in the left axilla, right morphological abnormalities. She did not have B symptoms, and subsequent 12-week fetal ultrasound did not detect

Discussion: This questionnaire identified variation in the internal QC protocol used by laboratories, including the type of controls, control levels processed and the frequency of use.

Results: 253 of the 850 laboratories enrolled in the FBC module returned a response to the questionnaire, which identified variation in the QC protocol used to identify non-conforming events on the FBC analyser, including the type of controls, control levels processed and the frequency of use.

Aim: With the advent of isocitrate dehydrogenase inhibitors (IDH) positivity for exon 4 mutations provides a therapeutic target in patients with haematological malignancies. Our aim is to investigate the prevalence and clinical significance of IDH 1 and IDH 2 in the patients diagnosed with myelodysplastic syndrome. Our secondary aim is to validate a sensitive, simple, robust and inexpensive assay by fluorescent melt curve analysis on a Rotor Gene Q platform for clinical use.

Methods: 39 patients newly diagnosed myelodysplastic syndrome were tested. Positive tests were confirmed by Sanger sequencing. The clinical characteristics, morphology, karyotype, genetic mutations, response to treatment and survival of patients were collected.

Results: IDH 2 mutations occurred with a frequency of 5.1% (2/39) and no IDH 1 mutations were detected. Both patients diagnosed with IDH 2 mutations progressed to acute myeloid leukaemia within 1 month and 8 months of diagnosis (100% vs 18.9%).

Conclusion: This study suggests that IDH 2 mutation confers a poorer prognosis in MDS but further validation is required. It is a promising therapeutic target in a predominantly incurable malignancy.