

SUMMARY STATISTICS

EQA round: NKDF1/18 - Bone Marrow Aspirate Film

Dead line (EQA round closed): 15.06.2018

Professional supervision: Czech Haematological Society
National Reference Laboratory for Haematology

| | | |
|------|-----|---|
| Key: | >>> | ... marks correct (expected) result |
| | > | ... marks conditionally correct (acceptable) result |

Patient A

Photo 1

| | | | | | |
|--------------|-------------------------------|--|-------|---|-------|
| Object no. 1 | Nuclear cells - type of cells | | 1 | Granulopoiesis: Myeloblast | 1,9 % |
| | | >>> | 51 | Lymphocyte pop.: Lymphocyte | 96 % |
| | Nuclear cells - morphology | > | 1 | Lymphocyte pop.: LGL (large granular lymphocyte) | 1,9 % |
| | | | 3 | Granulopoiesis: Normal finding | 5,7 % |
| | | >>> | 43 | Lymphocyte pop.: Normal lymphocyte/plasmocyte | 81 % |
| | | | 5 | Lymphocyte pop.: Reactive lymphocyte | 9,4 % |
| | 2 | Lymphocyte pop.: Pathological lymphocyte | 3,8 % | | |
| Object no. 2 | Nuclear cells - type of cells | > | 12 | Granulopoiesis: Promyelocyte | 23 % |
| | | >>> | 39 | Granulopoiesis: Neutrophil myelocyte | 74 % |
| | | | 1 | Granulopoiesis: Neutrophil metamyelocyte | 1,9 % |
| | Nuclear cells - morphology | | 1 | Granulopoiesis: Basophil myelocyte | 1,9 % |
| | | >>> | 28 | Granulopoiesis: Normal finding | 53 % |
| | | > | 19 | Granulopoiesis: Hypergranularity/toxic granulation | 36 % |
| | | | 3 | Granulopoiesis: Neutrophil disgranularity | 5,7 % |
| | | | 1 | Granulopoiesis: Cytoplasmatic vacuolisation | 1,9 % |
| | | > | 6 | Granulopoiesis: Nucleocytoplasmatic asynchrony | 11 % |
| | | | 1 | Granulopoiesis: Abnormal chromatin clumping | 1,9 % |
| | 1 | Granulopoiesis: Pseudo Chediak-Higashi granules | 1,9 % | | |
| Object no. 3 | Nuclear cells - type of cells | >>> | 53 | Other cells: Macrophage | 100 % |
| Object no. 4 | Nuclear cells - type of cells | | 11 | Granulopoiesis: Neutrophil bar | 21 % |
| | | >>> | 42 | Granulopoiesis: Neutrophil segment | 79 % |
| | Nuclear cells - morphology | | 2 | Granulopoiesis: Normal finding | 3,8 % |
| | | >>> | 31 | Granulopoiesis: Hypergranularity/toxic granulation | 58 % |
| | | | 2 | Granulopoiesis: Neutrophil disgranularity | 3,8 % |
| | | >>> | 48 | Granulopoiesis: Cytoplasmatic vacuolisation | 91 % |
| | | | 1 | Granulopoiesis: Neutrophil hypersegmentation | 1,9 % |
| | | | 3 | Granulopoiesis: Neutrophil and eosinophil hyposegmentation and acquired Pelger-Huët anomaly | 5,7 % |
| | | | 5 | Granulopoiesis: Abnormal chromatin clumping | 9,4 % |
| | 4 | Granulopoiesis: Döhle bodies | 7,5 % | | |
| | 1 | Granulopoiesis: Pseudo Chediak-Higashi granules | 1,9 % | | |
| Object no. 5 | Nuclear cells - type of cells | | 1 | Erythropoiesis: Proerythroblast | 1,9 % |
| | | >>> | 52 | Lymphocyte pop.: Plasmocyte | 98 % |
| | Nuclear cells - morphology | | 1 | Erythropoiesis: Microerythroblast | 1,9 % |
| | | >>> | 49 | Lymphocyte pop.: Normal lymphocyte/plasmocyte | 92 % |
| | 2 | Lymphocyte pop.: Pathological plasmocyte/plasmablast | 3,8 % | | |

Photo 2

| | | | | | |
|--------------|-------------------------------|--|--|---|-------|
| Object no. 1 | Nuclear cells - type of cells | | 1 | Erythropoiesis: Basophilic erythroblast | 1,9 % |
| | | >>> | 52 | Lymphocyte pop.: Plasmocyte | 98 % |
| | Nuclear cells - morphology | | 2 | Granulopoiesis: Normal finding | 3,8 % |
| | | | 1 | Erythropoiesis: Pycnosis of nucleus | 1,9 % |
| | | >>> | 44 | Lymphocyte pop.: Normal lymphocyte/plasmocyte | 83 % |
| | 5 | Lymphocyte pop.: Pathological plasmocyte/plasmablast | 9,4 % | | |
| Object no. 2 | Nuclear cells - type of cells | | 3 | Granulopoiesis: Myeloblast | 5,7 % |
| | | >>> | 47 | Granulopoiesis: Promyelocyte | 89 % |
| | | | 3 | Granulopoiesis: Neutrophil myelocyte | 5,7 % |
| | Nuclear cells - morphology | | 4 | Granulopoiesis: Normal finding | 7,5 % |
| | | | 2 | Granulopoiesis: Hypo-/agranularity | 3,8 % |
| | > | 8 | Granulopoiesis: Hypergranularity/toxic granulation | 15 % | |

| Patient A | | | | | |
|-----------------------------------|-------------------------------|-----|----|---|-------|
| Photo 2 | | | | | |
| Object no. 2 | Nuclear cells - morphology | | 8 | Granulopoiesis: Neutrophil disgranularity | 15 % |
| | | >>> | 43 | Granulopoiesis: Cytoplasmatic vacuolisation | 81 % |
| | | | 5 | Granulopoiesis: Nucleocytoplasmatic asynchrony | 9,4 % |
| | | | 1 | Granulopoiesis: Pseudo Chediak-Higashi granules | 1,9 % |
| | | | 3 | Granulopoiesis: Abnormal promyelocyte | 5,7 % |
| Object no. 3 | Nuclear cells - type of cells | >>> | 53 | Other cells: Macrophage | 100 % |
| Object no. 4 | Nuclear cells - type of cells | >>> | 42 | Granulopoiesis: Myeloblast | 79 % |
| | | > | 11 | Other cells: Blast, unclassifiable | 21 % |
| General view and diagnosis | | | | | |
| Cellularity | | | 5 | Normocellular | 9,4 % |
| | >>> | | 48 | Hypocellular | 91 % |
| Granulopoiesis - count | | | 1 | Within physiological limits | 1,9 % |
| | >>> | | 52 | Decreased | 98 % |
| Granulopoiesis - morphology | | | 6 | No significant changes | 11 % |
| | | | 12 | Dysplastic granulopoiesis | 23 % |
| | >>> | | 35 | Atypical/toxic granulopoiesis | 66 % |
| | | | | | |
| Erythropoiesis - count | | >>> | 33 | Within physiological limits | 62 % |
| | | | 2 | Increased | 3,8 % |
| | | | 18 | Decreased | 34 % |
| Erythropoiesis - morphology | | >>> | 35 | No significant changes | 66 % |
| | | > | 15 | Dysplastic erythropoiesis | 28 % |
| | | | 2 | Macroerythroblastic erythropoiesis | 3,8 % |
| | | | 1 | Atypical erythropoiesis | 1,9 % |
| Lymphopoiesis - count | | >>> | 29 | Within physiological limits | 55 % |
| | | >>> | 16 | Increased | 30 % |
| | | | 7 | Decreased | 13 % |
| Lymphopoiesis - morphology | | > | 34 | No significant changes | 64 % |
| | | >>> | 16 | Reactive changes/irritations | 30 % |
| | | | 3 | Pathological lymphopoiesis | 5,7 % |
| Monocytopoiesis - count | | | 31 | Within physiological limits | 58 % |
| | | >>> | 22 | Increased | 42 % |
| Monocytopoiesis - morphology | | > | 34 | No significant changes | 64 % |
| | | > | 19 | Pathological monocytopoiesis | 36 % |
| Estimation of diagnosis | | >>> | 47 | Haemophagocytic syndrome (primary, secondary) | 89 % |
| | | | 1 | CML (chronic myelogenous leukaemia) | 1,9 % |
| | | | 1 | CMML (chronic myelomonocytic leukaemia) | 1,9 % |
| | | | 3 | Post therapeutic/post infectious changes | 5,7 % |
| | | | 1 | Storage disease | 1,9 % |

| Patient B | | | | | | |
|------------------|-------------------------------|-----|------------------------------------|---|---|-------|
| Photo 1 | | | | | | |
| Object no. 1 | Nuclear cells - type of cells | | 4 | Megakaryopoiesis: Megakaryoblast | 7,5 % | |
| | | | 3 | Megakaryopoiesis: Promegakaryocyte | 5,7 % | |
| | | | 5 | Megakaryopoiesis: Megakaryocyte | 9,4 % | |
| | | | 1 | Other cells: Blast, unclassifiable | 1,9 % | |
| | | | 1 | Other cells: Macrophage | 1,9 % | |
| | | >>> | 39 | Other cells: Nonhaematopoetic malignant cell | 74 % | |
| Object no. 2 | Nuclear cells - type of cells | > | 12 | Erythropoiesis: Basophilic erythroblast | 23 % | |
| | | >>> | 41 | Erythropoiesis: Polychromatophil erythroblast | 77 % | |
| | Nuclear cells - morphology | | | 1 | Granulopoiesis: Normal finding | 1,9 % |
| | | >>> | 26 | Erythropoiesis: Normal finding | 49 % | |
| | | | > | 2 | Erythropoiesis: Abnormal chromatin clumping | 3,8 % |
| | | | | 1 | Erythropoiesis: Disturbance of cytoplasmatic haemoglobinisation | 1,9 % |
| | | | | 10 | Erythropoiesis: Nucleocytoplasmatic asynchrony | 19 % |
| | | 2 | Erythropoiesis: Megaloerythroblast | 3,8 % | | |
| | | 11 | Erythropoiesis: Macroerythroblast | 21 % | | |
| Object no. 3 | Nuclear cells - type of cells | >>> | 53 | Granulopoiesis: Neutrophil segment | 100 % | |
| | Nuclear cells - morphology | >>> | 50 | Granulopoiesis: Hypo-/agranularity | 94 % | |
| | | | 6 | Granulopoiesis: Cytoplasmatic vacuolisation | 11 % | |
| | | >>> | 47 | Granulopoiesis: Neutrophil hypersegmentation | 89 % | |
| | | | 1 | Granulopoiesis: Eosinophil hypersegmentation | 1,9 % | |
| Object no. 4 | Nuclear cells - type of cells | | 2 | Granulopoiesis: Neutrophil myelocyte | 3,8 % | |

Patient B

Photo 1

| | | | | | |
|--------------|-------------------------------|-----|----|--|-------|
| Object no. 4 | Nuclear cells - type of cells | | 1 | Granulopoiesis: Neutrophil metamyelocyte | 1,9 % |
| | | | 1 | Granulopoiesis: Neutrophil bar | 1,9 % |
| | | >>> | 49 | Lymphocyte pop.: Lymphocyte | 92 % |
| | Nuclear cells - morphology | | 1 | Granulopoiesis: Normal finding | 1,9 % |
| | | | 4 | Granulopoiesis: Hypo-/agranularity | 7,5 % |
| | | >>> | 24 | Lymphocyte pop.: Normal lymphocyte/plasmocyte | 45 % |
| | | > | 21 | Lymphocyte pop.: Reactive lymphocyte | 40 % |
| | | | 2 | Lymphocyte pop.: Pathological lymphocyte | 3,8 % |
| | | | | | |
| Object no. 5 | Nuclear cells - type of cells | | 2 | Granulopoiesis: Neutrophil metamyelocyte | 3,8 % |
| | | >>> | 35 | Granulopoiesis: Neutrophil bar | 66 % |
| | | | 10 | Granulopoiesis: Eosinophil stab | 19 % |
| | Nuclear cells - morphology | | 6 | Monocyte pop: Monocyte | 11 % |
| | | | 1 | Granulopoiesis: Normal finding | 1,9 % |
| | | >>> | 43 | Granulopoiesis: Hypo-/agranularity | 81 % |
| | | | 1 | Granulopoiesis: Hypergranularity/toxic granulation | 1,9 % |
| | | > | 5 | Granulopoiesis: Neutrophil disgranularity | 9,4 % |
| | | | 2 | Granulopoiesis: Cytoplasmatic vacuolisation | 3,8 % |
| | | | 3 | Granulopoiesis: Nucleocytoplasmatic asynchrony | 5,7 % |
| | | > | 13 | Granulopoiesis: Megalostabs and megalometamyelocytes | 25 % |
| | | | 1 | Granulopoiesis: Abnormal chromatin clumping | 1,9 % |
| | | | 4 | Monocyte pop: Normal finding | 7,5 % |
| | | | 2 | Monocyte pop: Atypical/reactive monocyte | 3,8 % |

Photo 2

| | | | | | | | |
|----------------------------|-------------------------------|--------------|-------------------------------|---|-------|---|------|
| Object no. 1 | Nuclear cells - type of cells | | 3 | Megakaryopoiesis: Megakaryoblast | 5,7 % | | |
| | | | 3 | Megakaryopoiesis: Promegakaryocyte | 5,7 % | | |
| | | | 3 | Megakaryopoiesis: Megakaryocyte | 5,7 % | | |
| | | | 1 | Other cells: Blast, unclassifiable | 1,9 % | | |
| | | >>> | 43 | Other cells: Nonhaematopoetic malignant cell | 81 % | | |
| Object no. 2 | Nuclear cells - type of cells | >>> | 52 | Granulopoiesis: Neutrophil bar | 98 % | | |
| | | | 1 | Granulopoiesis: Neutrophil segment | 1,9 % | | |
| | Nuclear cells - morphology | > | 12 | Granulopoiesis: Normal finding | 23 % | | |
| | | >>> | 37 | Granulopoiesis: Hypo-/agranularity | 70 % | | |
| | | | 1 | Granulopoiesis: Nucleocytoplasmatic asynchrony | 1,9 % | | |
| | | | 9 | Granulopoiesis: Megalostabs and megalometamyelocytes | 17 % | | |
| Object no. 3 | Nuclear cells - type of cells | | 1 | Erythropoiesis: Polychromatophil erythroblast | 1,9 % | | |
| | | >>> | 52 | Erythropoiesis: Orthochromatic erythroblast | 98 % | | |
| | Nuclear cells - morphology | | 2 | Granulopoiesis: Normal finding | 3,8 % | | |
| | | >>> | 36 | Erythropoiesis: Normal finding | 68 % | | |
| | | | 1 | Erythropoiesis: Disturbance of cytoplasmatic haemoglobinisation | 1,9 % | | |
| | | | 11 | Erythropoiesis: Nucleocytoplasmatic asynchrony | 21 % | | |
| | | | 1 | Erythropoiesis: Megaloerythroblast | 1,9 % | | |
| | | | 1 | Megakaryopoiesis: Normal finding | 1,9 % | | |
| | | Object no. 4 | Nuclear cells - type of cells | >>> | 36 | Erythropoiesis: Basophilc erythroblast | 68 % |
| | | | | | 17 | Erythropoiesis: Polychromatophil erythroblast | 32 % |
| Nuclear cells - morphology | | | 1 | Granulopoiesis: Normal finding | 1,9 % | | |
| | | | 1 | Granulopoiesis: Nucleocytoplasmatic asynchrony | 1,9 % | | |
| | > | | 16 | Erythropoiesis: Normal finding | 30 % | | |
| | | | 1 | Erythropoiesis: Abnormal chromatin clumping | 1,9 % | | |
| | >>> | | 24 | Erythropoiesis: Disturbance of cytoplasmatic haemoglobinisation | 45 % | | |
| | | | 6 | Erythropoiesis: Nucleocytoplasmatic asynchrony | 11 % | | |
| | | | 3 | Erythropoiesis: Megaloerythroblast | 5,7 % | | |
| | | | 12 | Erythropoiesis: Macroerythroblast | 23 % | | |
| Object no. 5 | Nuclear cells - type of cells | >>> | 53 | Other cells: Bare nuclei / smudge cell | 100 % | | |

General view and diagnosis

| | | | | |
|-----------------------------|-----|----|-----------------------------|-------|
| Cellularity | | 10 | Normocellular | 19 % |
| | >>> | 43 | Hypocellular | 81 % |
| Granulopoiesis - count | >>> | 35 | Within physiological limits | 66 % |
| | | 3 | Increased | 5,7 % |
| | > | 14 | Decreased | 26 % |
| Granulopoiesis - morphology | >>> | 12 | No significant changes | 23 % |
| | > | 38 | Dyspalstic granulopoiesis | 72 % |

Patient B

General view and diagnosis

| | | | | |
|------------------------------|-----|----|--|-------|
| Granulopoiesis - morphology | | 2 | Megaloblastic granulopoiesis | 3,8 % |
| | | 1 | Atypical/toxic granulopoiesis | 1,9 % |
| Erythroipoiesis - count | >>> | 38 | Within physiological limits | 72 % |
| | > | 6 | Increased | 11 % |
| | | 8 | Decreased | 15 % |
| Erythroipoiesis - morphology | >>> | 11 | No significant changes | 21 % |
| | > | 25 | Dysplastic erythroipoiesis | 47 % |
| | | 6 | Megaloblastic erythroipoiesis | 11 % |
| | | 10 | Macroerythroblastic erythroipoiesis | 19 % |
| | | 1 | Atypical erythroipoiesis | 1,9 % |
| Lymphopoiesis - count | >>> | 44 | Within physiological limits | 83 % |
| | | 2 | Increased | 3,8 % |
| | | 6 | Decreased | 11 % |
| Lymphopoiesis - morphology | >>> | 49 | No significant changes | 92 % |
| | | 2 | Reactive changes/irritations | 3,8 % |
| | | 2 | Pathological lymphopoiesis | 3,8 % |
| Monocytopoiesis - count | >>> | 53 | Within physiological limits | 100 % |
| Monocytopoiesis - morphology | >>> | 53 | No significant changes | 100 % |
| Estimation of diagnosis | | 1 | Anaemia - unclassifiable | 1,9 % |
| | | 2 | CML (chronic myelogenous leukaemia) | 3,8 % |
| | | 1 | MDS-MLD (MDS with multilineage dysplasia) | 1,9 % |
| | | 3 | Acute myeloid leukaemia - all types according to WHO (excl. APL) | 5,7 % |
| | >>> | 46 | Metastatic impairment of bone marrow | 87 % |

Evaluation of the results - scoring system

NKDF1/18

| Patient A | Photo A1 | Photo A2 | General view |
|--|-----------------|-----------------|-----------------|
| Maximal achievable score: | 60 | 40 | 20 |
| Successful participants (success 60 % and more): | 51 (it is 96 %) | 49 (it is 92 %) | 38 (it is 72 %) |
| Minimal success in this round: | 40,0 % | 0,0 % | -15,0 % |
| Maximal success in this round: | 100,0 % | 100,0 % | 100,0 % |
| Patient B | Photo B1 | Photo B2 | General view |
| Maximal achievable score: | 60 | 52 | 22 |
| Successful participants (success 60 % and more): | 40 (it is 75 %) | 42 (it is 79 %) | 34 (it is 64 %) |
| Minimal success in this round: | 13,3 % | 34,6 % | 31,8 % |
| Maximal success in this round: | 100,0 % | 100,0 % | 100,0 % |
| Number of participants: 53 | | | |
| Number of participants that succeeded: | in all 6 tests: | 24 (it is 45 %) | |
| | in 5 tests: | 10 (it is 19 %) | |
| | in 4 tests: | 11 (it is 21 %) | |
| | in 3 tests: | 4 (it is 8 %) | |
| | in 2 tests: | 2 (it is 4 %) | |
| | in 1 test: | 0 (it is 0 %) | |
| | in no test: | 2 (it is 4 %) | |