The story of the two headed monster

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Hematology

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Once upon a time…

- 72 year old, previously healthy man.
- Hospitalized on June 2019 for investigation of newly diagnosed pancytopenia, seen on routine blood tests. (previous test on 2016 was normal).

- Blood count:
  WBC 1.3K
  5% blasts
  27% neutrophils – abs 350

- Hb 8.5, anisocytosis, poikilocytosis, tear drops
- PLT 73K

Bone marrow 1– 16/6/2019

- **Cytology** –
  prominent dysplastic changes
  5% blasts.

- Biopsy is pending.
  The patient is well,
  blood counts are stable.

- **Biopsy results** (mid July)
  * 60% cellularity
  * myeloid lineage – left shift, almost without maturation.
  15% blasts (MPO, CD117)
  * Dysplastic changes on red cell lineage and megakaryocytes.

- **MDS with excess of blasts II.**
- **IPSS high risk**
- **Hypomethylating agent (+HSC donor search)**

24/7/2019

- Severe and sudden clinical deterioration (weak, weight loss, ascites, bilateral leg edema, pleural effusion).
- Blood counts are stable.
- **Albumin 3.4→ 2.7**
  LDH 1000 → 3300
  uric acid 6.0 →10.3

Bone marrow 2– 25/7/2019

- **Cytology** –
  * Hypercellular bone marrow
  * Severe dysplastic changes
  *__18% Blasts__ (only half have myeloid immunophenotype.
  The other half - ?)

- **Pathology** –
  * Severe dysplastic changes – trilineage.
  * __Almost 20% myeloblasts__

MDS in leukemic transformation?

- NPM1, FLT3, INV16, t(8;21) – neg

תוצאות בדיקת כרומוזומים במח עצם:

שיטת הבדיקה: G-Banding

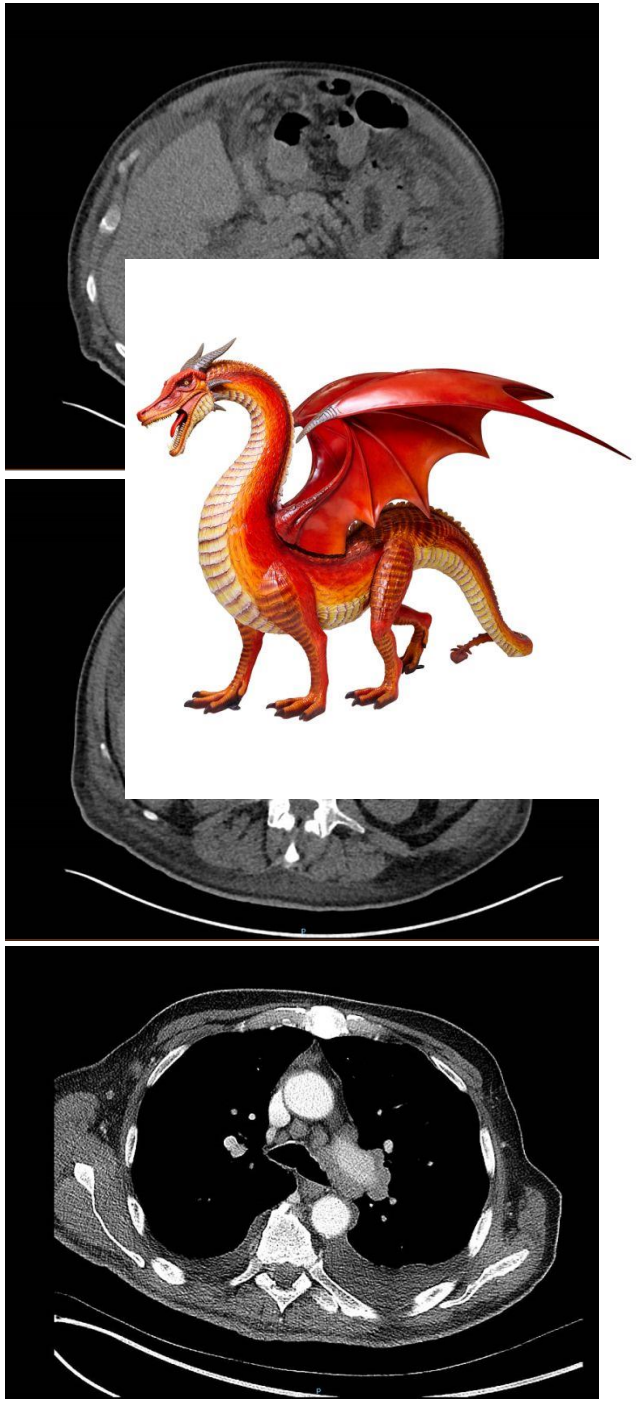
מס' תאים שנבדקו	תשובת הקריוטיפ
15	
3	48-50,XY,+X,+5,+11,+18,del(6)(q12q23),add(14)(q32)
7	45,X0,del(4)(q34),del(6)(q12q23),add(14)(q32)
4	45,X0,dek(4)(q34),del(6)(q12q23),inv13!,add(14)(q32)
1	46,XY

- NGS – positive for U2AF1 VAF 33%

But something else is lurking…

- **Cytology –**
  Lymphocytic infiltrate, pathologic, clonal B cells CD19 CD20 KAPPA

- **pathology –**
  CD20 and BCL6 demonstrate groups of large and small lymphocytes – consistent with lymphoma.



- Lymphadenopathy:
  - mediatinal
  - supra diaphragmatic
  - axillary
  - celiac
  - retroperitoneal
  - illiac
  - inguinal
- Omental implants
- Ascites, pleural effusion, pericardial effusion.

- Needle biopsy from inguinal lymph node – **DLBCL, non-GCB, high proliferation index**


MDS IN LEUKEMIC TRANSFORMATION
DLBCL, non-GCB, high proliferation index

Time for battle

- Seems like the **lymphoma** is the more aggressive disease.
- Starting treatment with R-CHOP, very reduced dose.

- After one cycle – dramatic improvement in the patient's general condition.
  - Ascites, leg edema and pleural effusion are receding.
  - LDH 7300→360
  - Albumin 2.7→3.5
  - Blood counts are stable

Time for battle

- Continuing treatment with R-CHOP, gradually increasing doses. No treatment related complications.

- Blood counts are improving:
  WBC 4000
  Hb 12.4
  plt 197

Reassessment

- PET-CT (after cycle 5):
  - The lymphoadenopathy receded.
  - No FDG uptake
  - The ascites, pleural effusion and pericardial effusion receded.

- No sigh of active lymphoma.

Reassessment

- Bone marrow (27/10, after cycle 4):
- Cytology: Hypercellular bone marrow, normal morphology.
- Pathology: Hypercellular bone marrow (60%),
  -- myeloid hyperplasia (GCSF) with less then 4% blasts. Normal maturation of the myeloid lineage.
  -- Erythroid lineage and megakaryocytes are normal (some dysplastic megakaryocytes).
  -- No lymphoproliferative infiltrate.

reassessment

תוצאת הבדיקה: תקינה

תוצאות בדיקת כרומוזומים במח עצם:

שיטת הבדיקה: G-Banding

תשובת הקריוטיפ	מס' תאים שנבדקו
	13
46,XY	10

סיכום תוצאות: בדיקת הכרומוזומים הראתה קריוטיפ תקין של זכר. לא נמצא קלון.

תוצאות בדיקת כרומוזומים במח עצם:

שיטת הבדיקה: G-Banding

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Clinical significance of cytogenetic aberrations in bone marrow of patients with diffuse large B-cell lymphoma: prognostic significance and relevance to histologic involvement

Seon Young Kim[1], Hyo Jung Kim[2], Hye Jin Kang[3], Jin Seok Kim[4], Hyeon Seok Eom[5], Tae Min Kim[6], Sung-Soo Yoon[6], Cheolwon Suh[7*], Dong Soon Lee[1*] and Korean Society of Hematology Lymphoma Working Party

	tic Abnormalities
Good	normal, del(1,7), del(5q), del(12p), del(20q), double including del(5q)
Intermediate	–7/7q–, +8, i(17q), +19, +21, any other single, double, independent clones
Poor	der(3)(q21)/der(3)(q26), double including –7/7q–, complex (three abnormalities)
Very poor	complex (more than three abnormalities)

ations
pecific cytogenetic ab-
chromosomal aberra-
aberrations (n = 150)
st frequently involved
d 18. The most com-
isomy 18, trisomy 7,
13. The predominant
the following loci:
19q13, 19p13, 1p32-
lcen-1q12, 9p22-p24,
ns of 6q; and duplica-
tions of 1q. The well-known oncogenes and lymphoma-

Kim et al. journal of hematology & oncology 2013

Time for round two

- January 2020 – HDMTX
- February 2020 – blood counts are dropping:
  WBC 2K
  Hb 10.7
  plt 125
- Peripheral blood Blasts counts is rising to 20%.
- Bone marrow cytology: no excess of blasts (?)
- Pathology is pending.
- Normal karyotype.