Multinucleated Giant Plasma Cells in a new diagnosis of multiple myeloma

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Mr M-O

- 90 year old man
- Investigated for asymptomatic anaemia
- Found to have an IgG kappa paraprotein of 38g/L
- Total protein 95g/L
- Normal renal function, no lytic lesions on skeletal survey
- Referred for bone marrow biopsy
Aspirate – Low Power

- Markedly increased large cells, with morphology suggestive of megakaryocytes

Giemsa stain, x40
Aspirate – High Power

- variable appearance
- 38% plasma cells, clusters up to 80%
- frequent bi- and tri-nucleate forms
- Mott and Dutcher cells
- No significant plasmablast population (~1%)

Giemsa stain, x100 oil immersion
Aspirate – High Power

- A proportion of the cells thought to be megakaryocytes showed:
  - Strongly basophilic cytoplasm
  - Multinucleate forms
  - Vesicles
Giemsa stain, x100 oil immersion
What are these multinucleated cells?

Langerhans giant cells

Osteoclast

Trephine
Trephine – H+E

- Multinucleated cells from patient
- Langerhans Giant cell
- Multinucleated cell from patient
Immunohistochemistry - kappa
Immunohistochemistry - kappa
Immunohistochemistry – CD38
Immunohistochemistry – CD138
Immunohistochemistry – CD138
Trephine Report

• “markedly atypical plasma cells are identified and multinucleated plasma cells are also seen”
• Plasma cells account for >90% of cells
Images in Hematology

Megakaryocyte-like Giant Myeloma Cells

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“Mimics of megakaryocytes: giant bizarre myeloma cells”

A. Thought to be atypical megakaryocytes
B. Noted blue cytoplasm compared to granular purple cytoplasm of megakaryocytes
C. CD138 positive
D. CD61 negative

Multinucleated giant myeloma cells after failure of daratumumab therapy

- Bortezomib/dex + melAUTO→PR
- Lenalidomide/dex + allogeneic transplant
- Pomalidomide/dex
- Multiple treatment response assessment marrows
Post daratumumab bone marrow biopsy

CD38-, CD138/56+

Evolution of multinucleate giant cells with up to 28 nuclei
Other investigations

- Flow cytometry:
  - Positive: CD38 (high)/138/200, cytoplasmic Kappa
  - Negative: CD19/20/45/56.
Other investigations

• FISH: loss of two signals for 1p and gain of 1q seen in many cells
  • Gain 1q = poor prognosis
• Karyotype: normal
Treatment

- lenolidamide 25mg daily and dexamethasone 20mg weekly

![Graph showing paraprotein levels over months since diagnosis. The graph indicates a significant decrease in paraprotein levels from Dx to 3 months, with a slower decrease thereafter.]
Progress

- Partial response
- Mild persistent asymptomatic anaemia, no other disease symptoms
- No treatment side effects reported
What does it all mean?

The Presence of Multinucleated Plasma Cells in Bone Marrow Aspirates Has No Clinical Significance.

Mark Shumate and Cecille Whitehead

Blood 2009 114:4904;

• Study of 61 consecutive aspirates for multiple myeloma
• 34 had multinucleated plasma cells → usual bi- and tri-nucleated forms
Anaplastic myeloma

- Generally young, IgA, complex karyotype with gain 1q
- Predisposition for extramedullary sites
- May be present at diagnosis or represent progressive de-differentiation
- Associated with a very poor prognosis
What about giant multinucleated plasma cells?


- 1991 - IgM kappa – no response to therapy, died within 6 months
- 1989 – IgA kappa – aggressive disease, died within 6 months

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The significance of multinucleated plasma cells is debatable with few studies linking multinucleated plasma cell to an aggressive clinical course, light chain type of disease, and resistance to conventional chemotherapy, while some studies refuted any such association.\textsuperscript{[3],[4]}