

Mielogramas no HFF

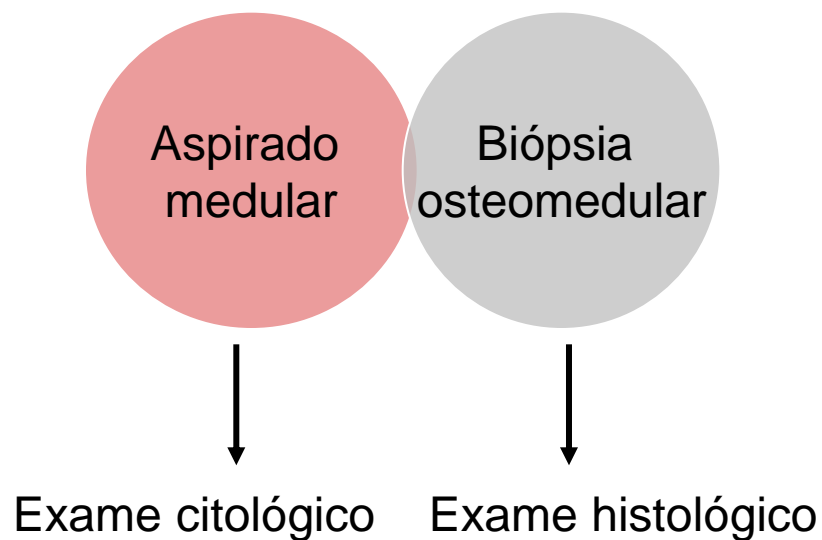
Casuística de 2012 a 2016

Serviço de Patologia Clínica
Laboratório de Hematologia
Máriam Calú

Mielogramas no HFF

Introdução

O exame da medula óssea é fundamental para a investigação e diagnóstico de doenças de etiologias diversas.



As principais indicações do exame de MO são:

- investigação de anemia inexplicada, índices eritrocitários anormais, outras citopenias ou citoses
- investigação de alterações na Morfologia do sangue periférico sugestivas de doença da medula óssea
- diagnóstico/estadiamento/*follow-up* de doenças hemato-oncológicas
- suspeita de infiltração por células metastáticas
- lesões osteolíticas de etiologia desconhecida
- organomegalias ou presença de massas inacessíveis à biópsia
- investigação de febre de etiologia desconhecida ou infecções específicas
- avaliação dos depósitos de ferro
- investigação de doenças de armazenamento
- exclusão de doenças hematológicas em potenciais doadores alogénicos de células hematopoiéticas

Mielogramas no HFF

Introdução

As contra-indicações do exame de MO são:

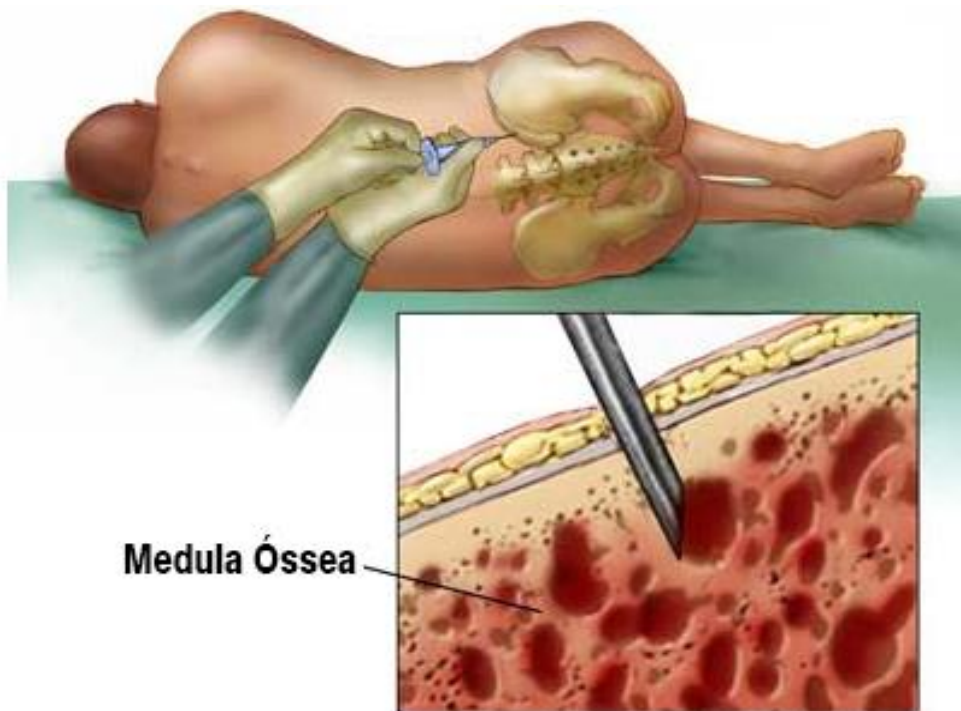
- trombocitopénia grave
- deficiência de factores de coagulação
- infecção no local da punção
- ACO / anti-agregantes plaquetários

Mielogramas no HFF

Introdução

Colheita da Amostra:

- crista íliaca póstero-superior / antero-superior
- esterno
- tíbia



Mielogramas no HFF

Introdução

Antes da realização do exame:

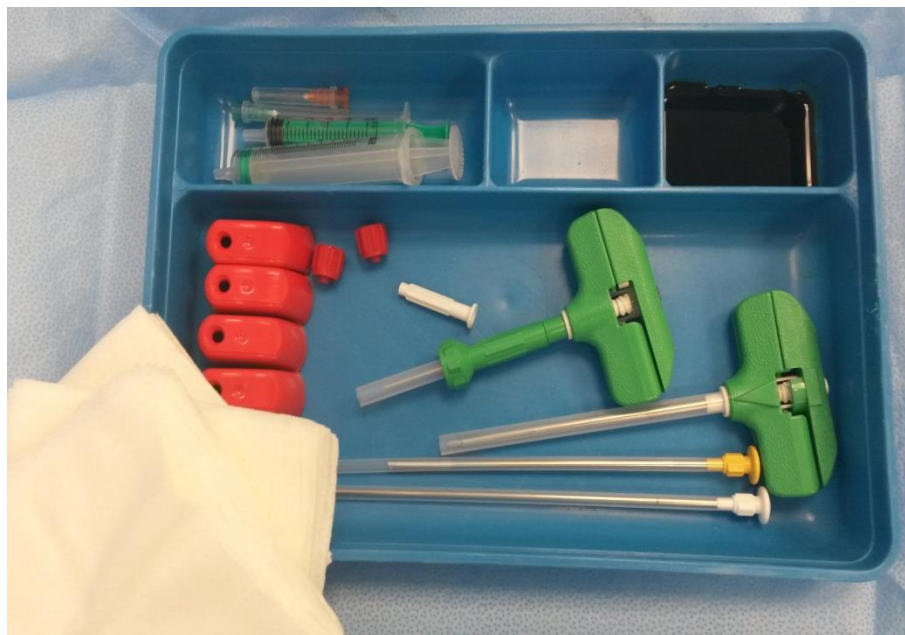
- reverter a terapêutica anticoagulante
- obter um hemograma e uma Morfologia
- explicar o procedimento ao doente
- obter o consentimento informado



Mielogramas no HFF

Introdução

Material:





Mielogramas no HFF Introdução



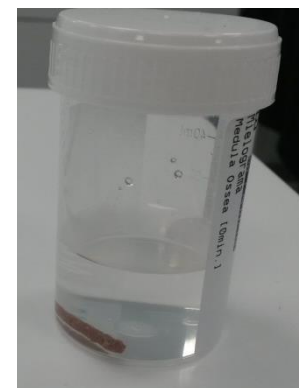
Técnica



Made With
VivaVideo

Mielogramas no HFF

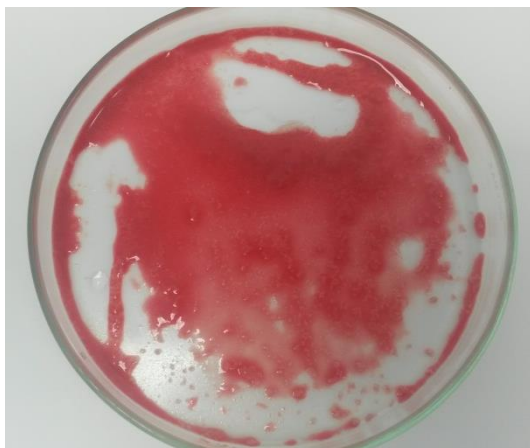
Introdução



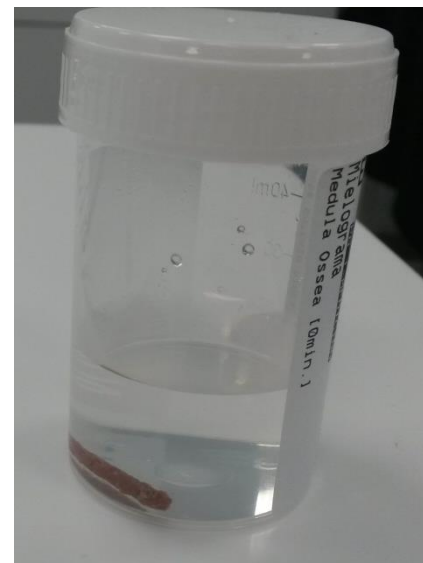
Mielogramas no HFF

Introdução

Aspirado Medular:



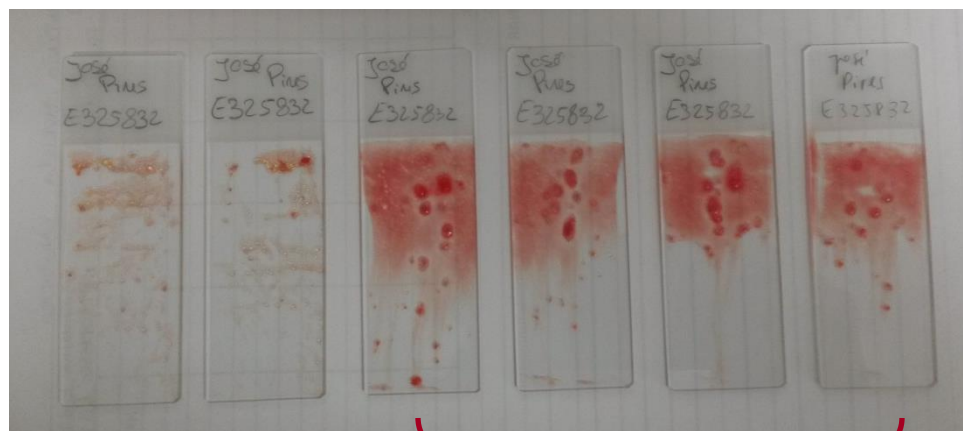
Biópsia Óssea:



Mielogramas no HFF

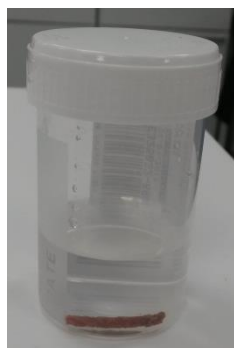
Introdução

Preparação das Lâminas:



Rolamento

Esfregaço



Mielogramas no HFF

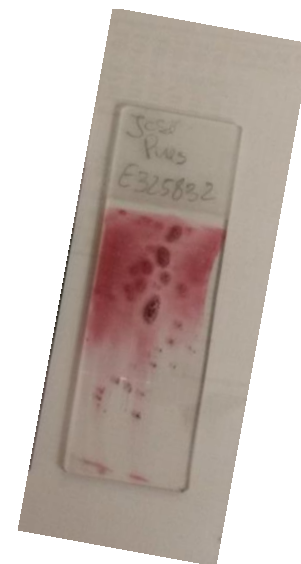
Introdução



SP-10



Coloração automática
MGG



Coloração manual
Perls

Mielogramas no HFF

Introdução

Observação de Esfregaços de Aspirado de Medula Óssea:

História Clínica



Hemograma



Morfologia de Sangue Periférico

Diagnóstico da Doença Hematooncológica

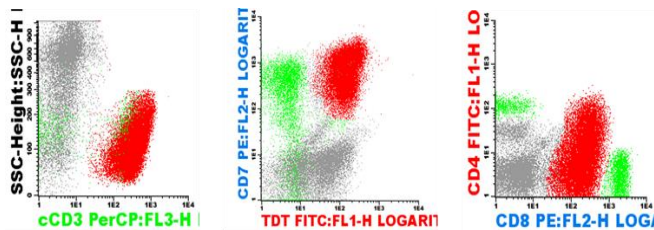
Mielograma
(citoquímicas)



Biópsia Osteomedular



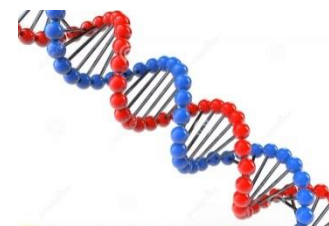
Imunofenotipagem



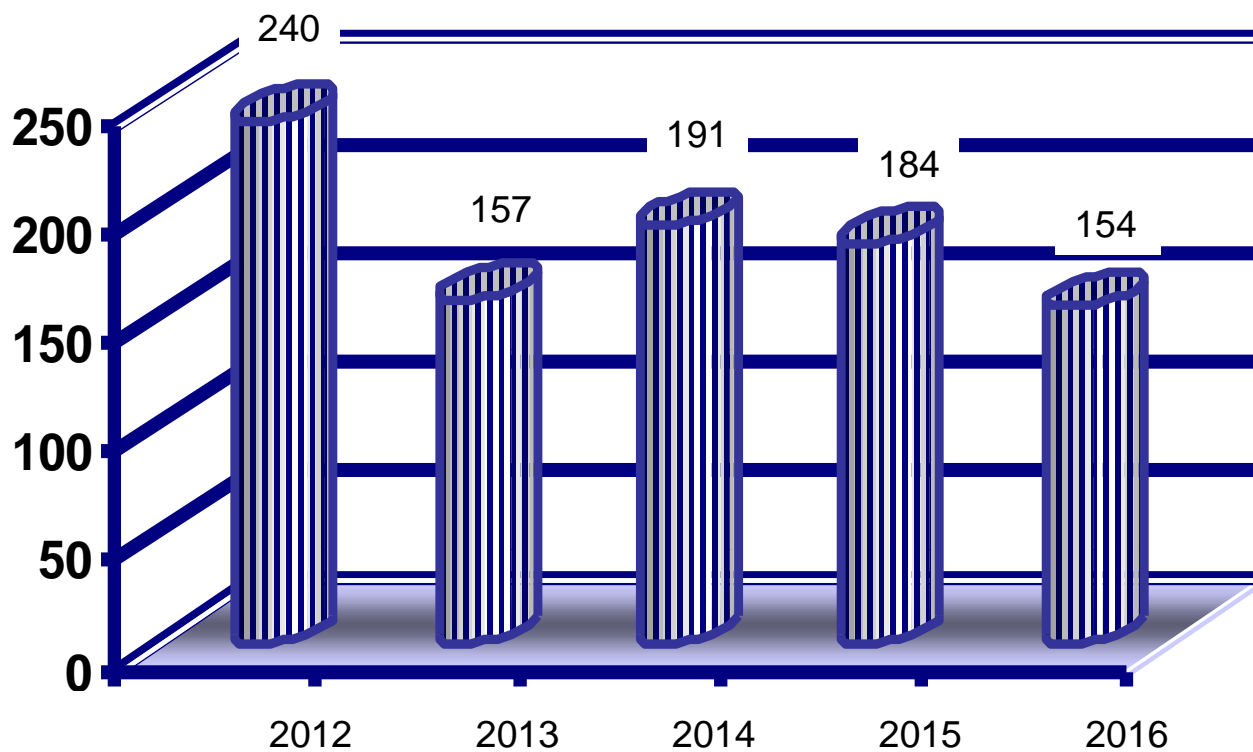
Citogenética



Biologia molecular



Total de mielogramas efectuados de 2012 a 2016

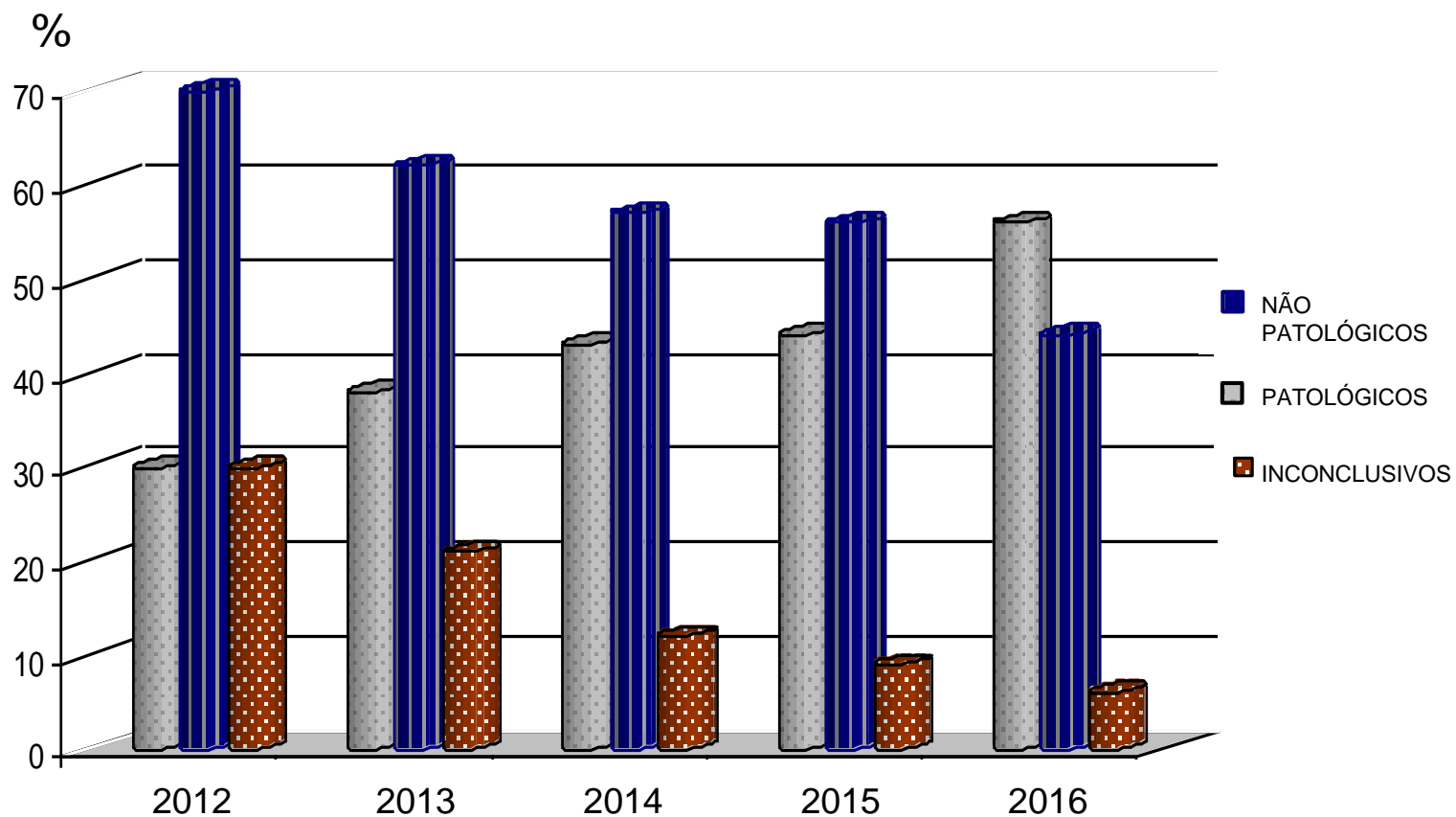


n= 926

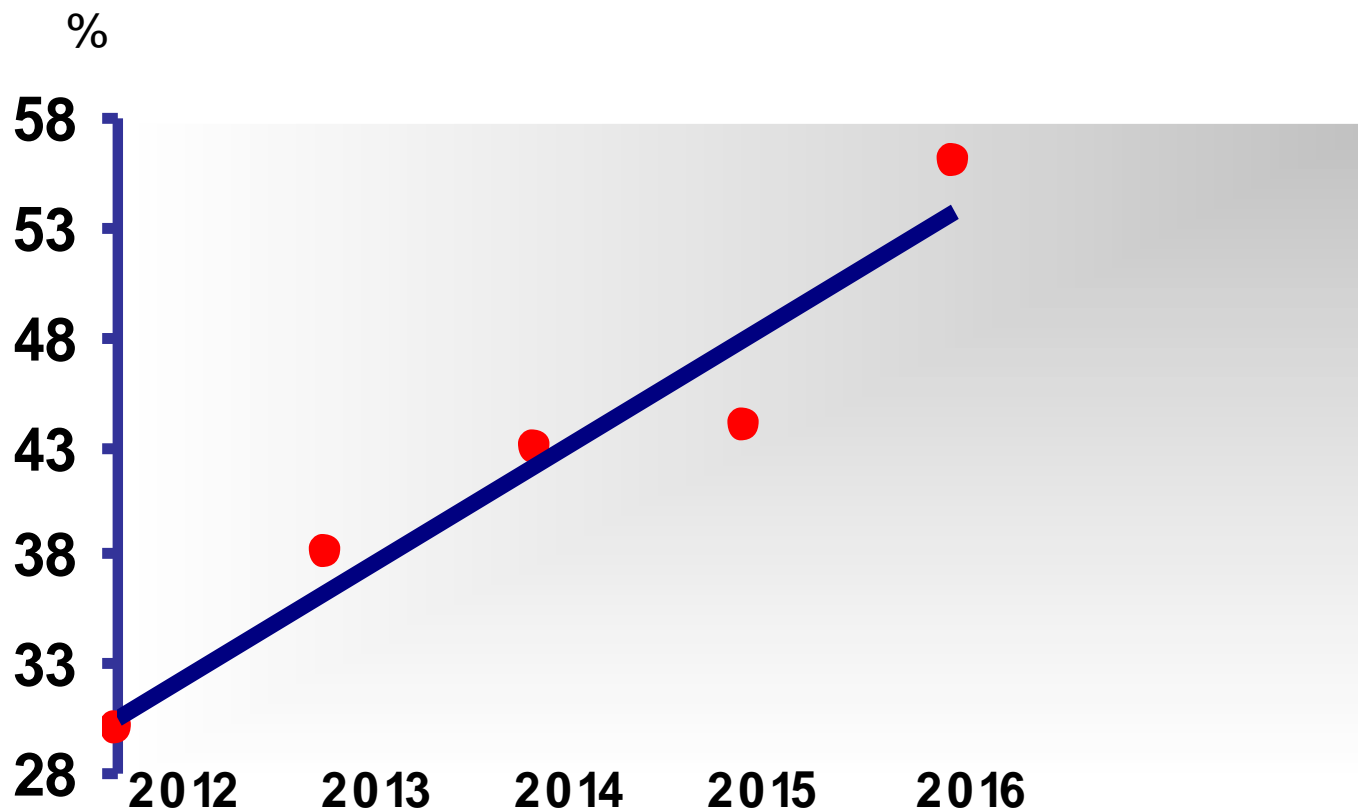
Mielogramas no HFF

Estatística

Percentagem de mielogramas efectuados de 2012 a 2016

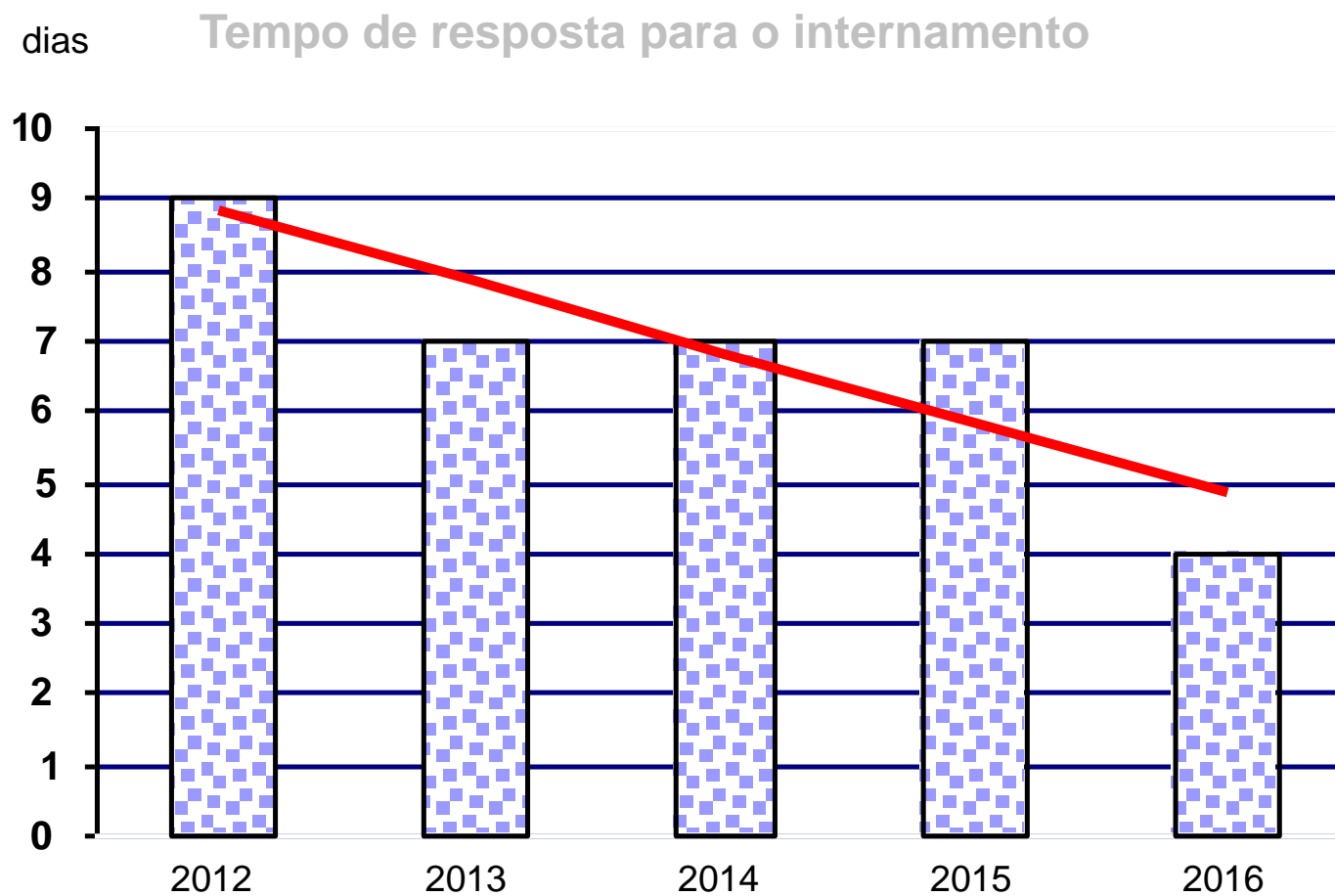


Evolução percentual de resultados patológicos



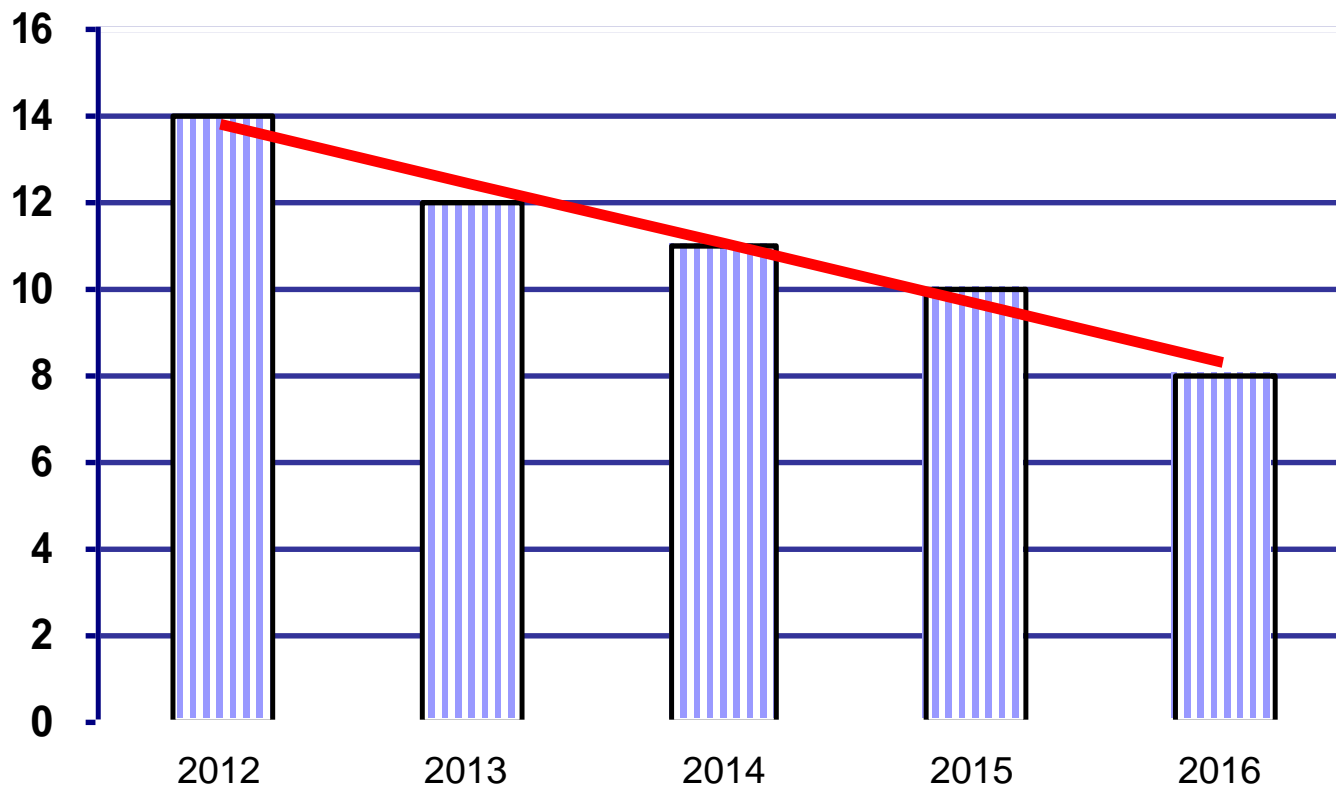
Mielogramas no HFF

Estatística



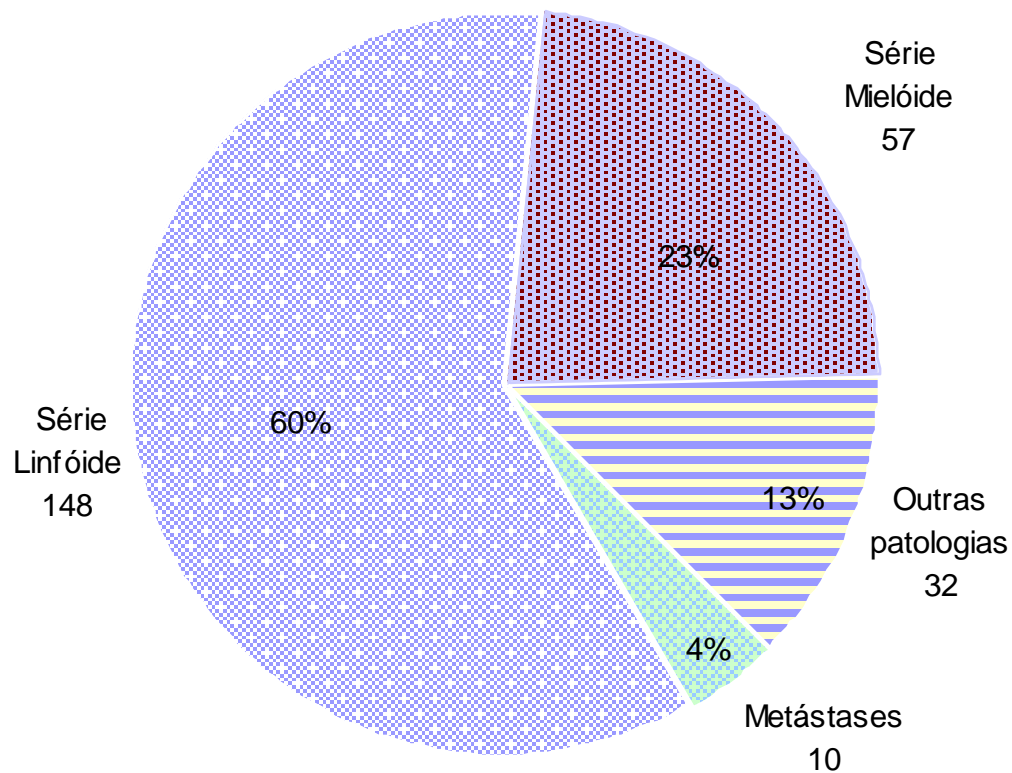
Tempo de resposta para o doente em ambulatório

dias



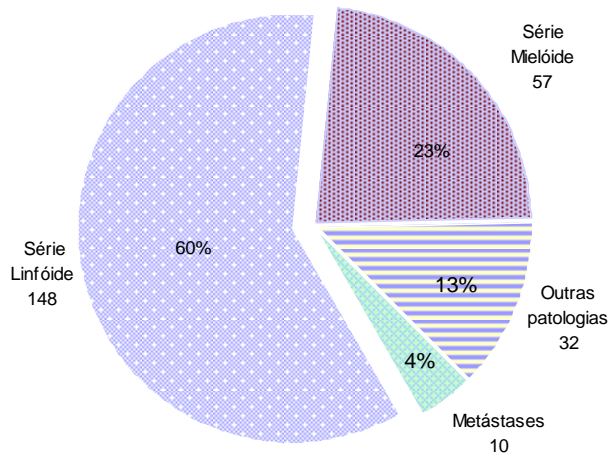
Análise das patologias: Prevalência das Patologias de 2014 a 2016

n= 529



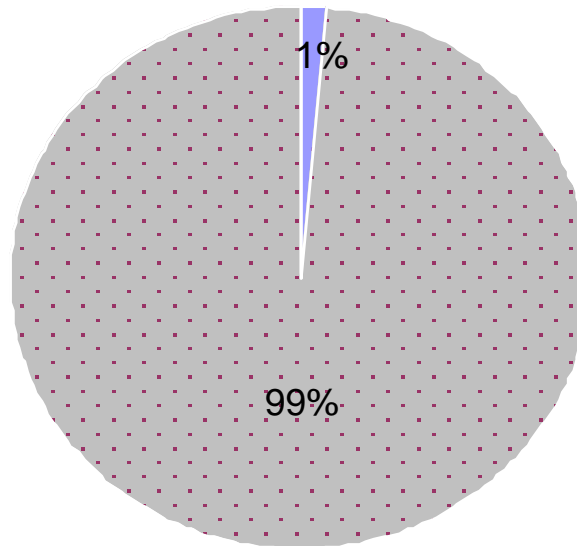
Mielogramas no HFF

Estatística



Série Linfóide

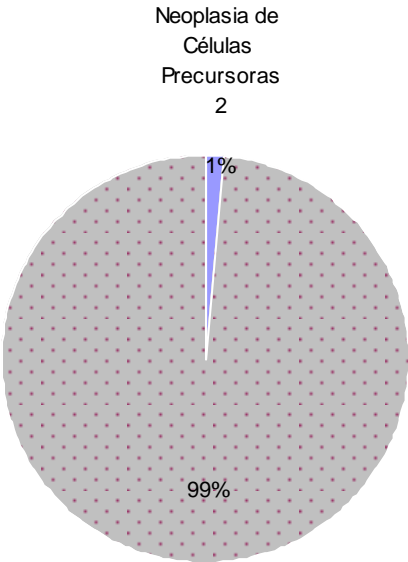
Neoplasia de
Células
Precursoras
2



Neoplasia de
Células B
Maduras
146

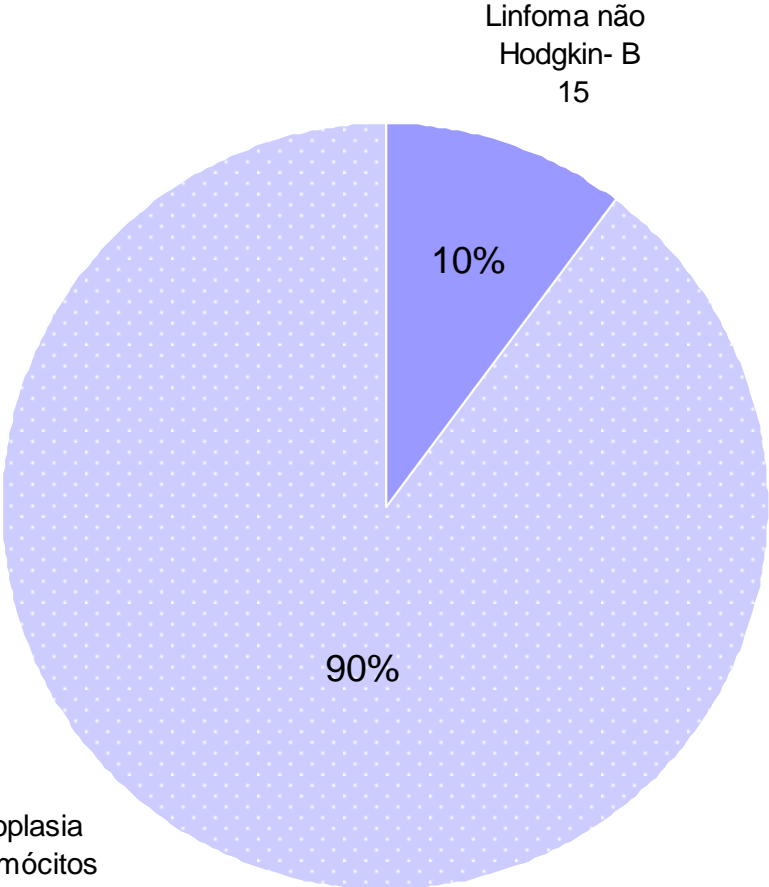
Mielogramas no HFF

Estatística



Neoplasia de Células B Maduras
146

Neoplasia de Células B Maduras



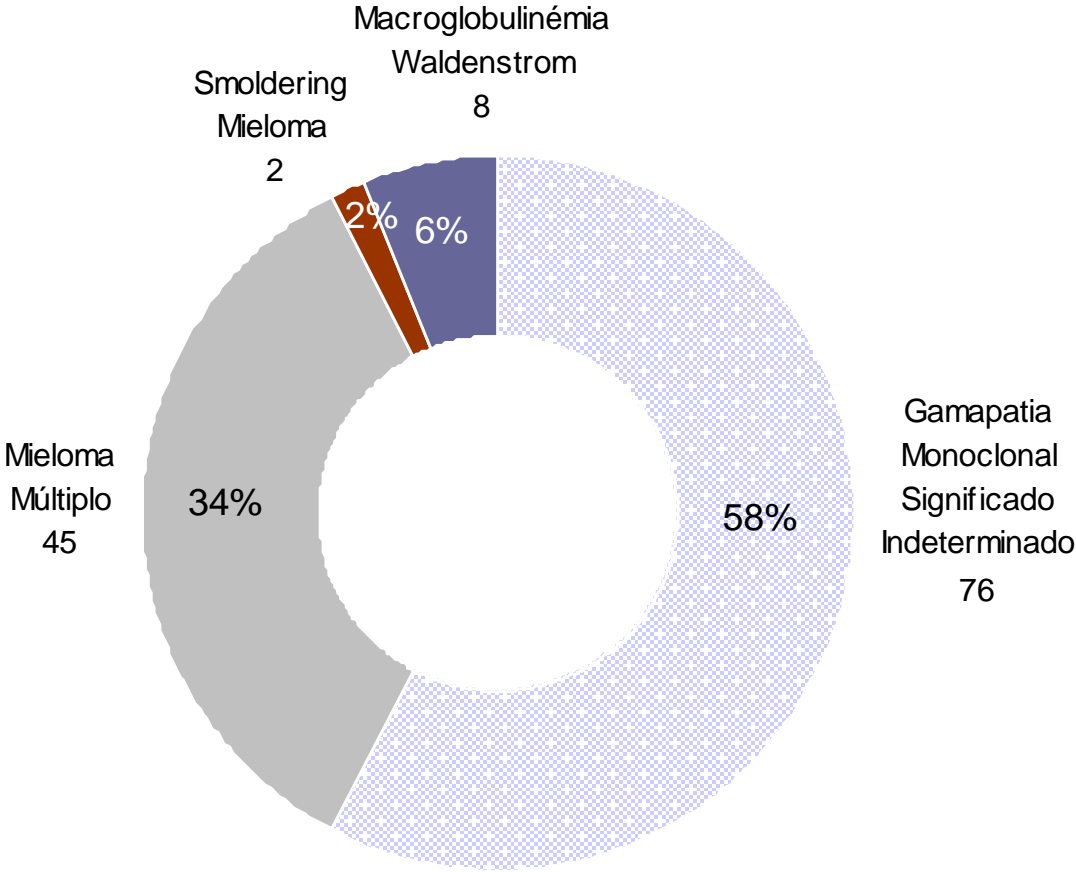
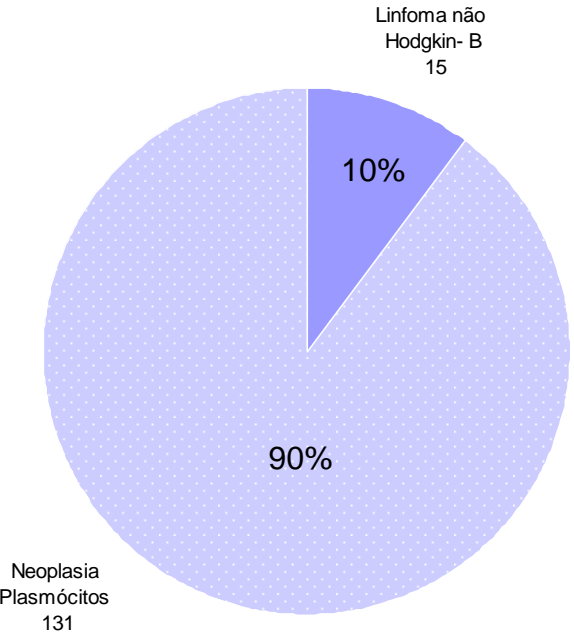
Linfoma não Hodgkin- B
15

Neoplasia Plasmócitos
131

Mielogramas no HFF

Estatística

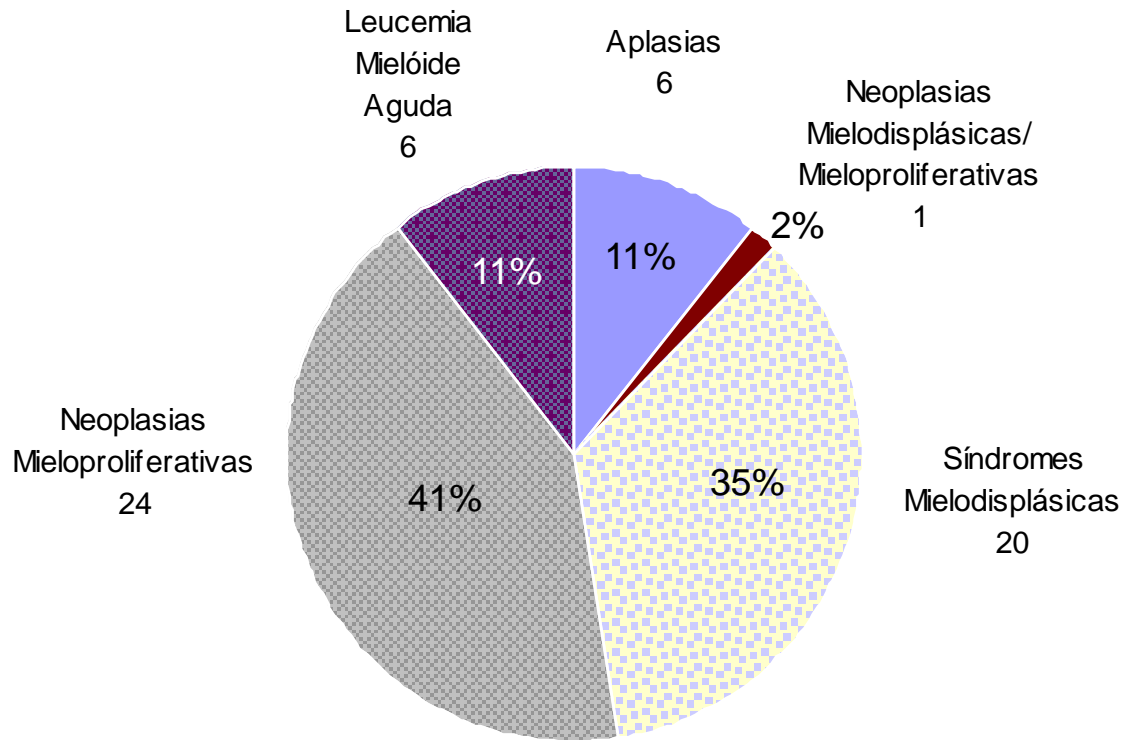
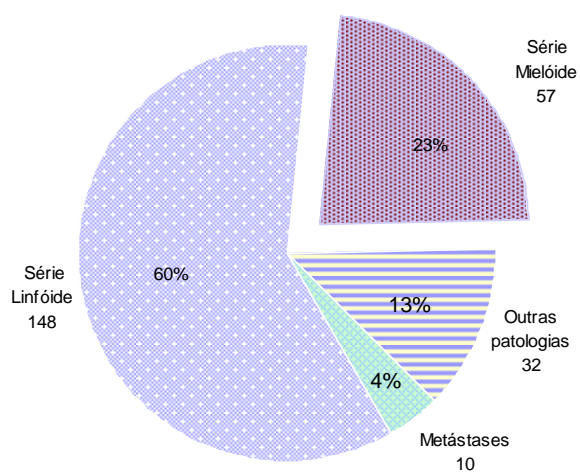
Neoplasia dos Plasmócitos



Mielogramas no HFF

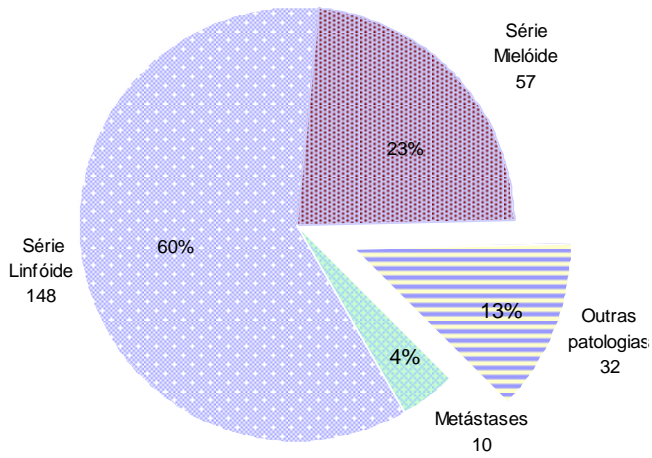
Estatística

Série Mielóide



Mielogramas no HFF

Estatística



Outras patologias

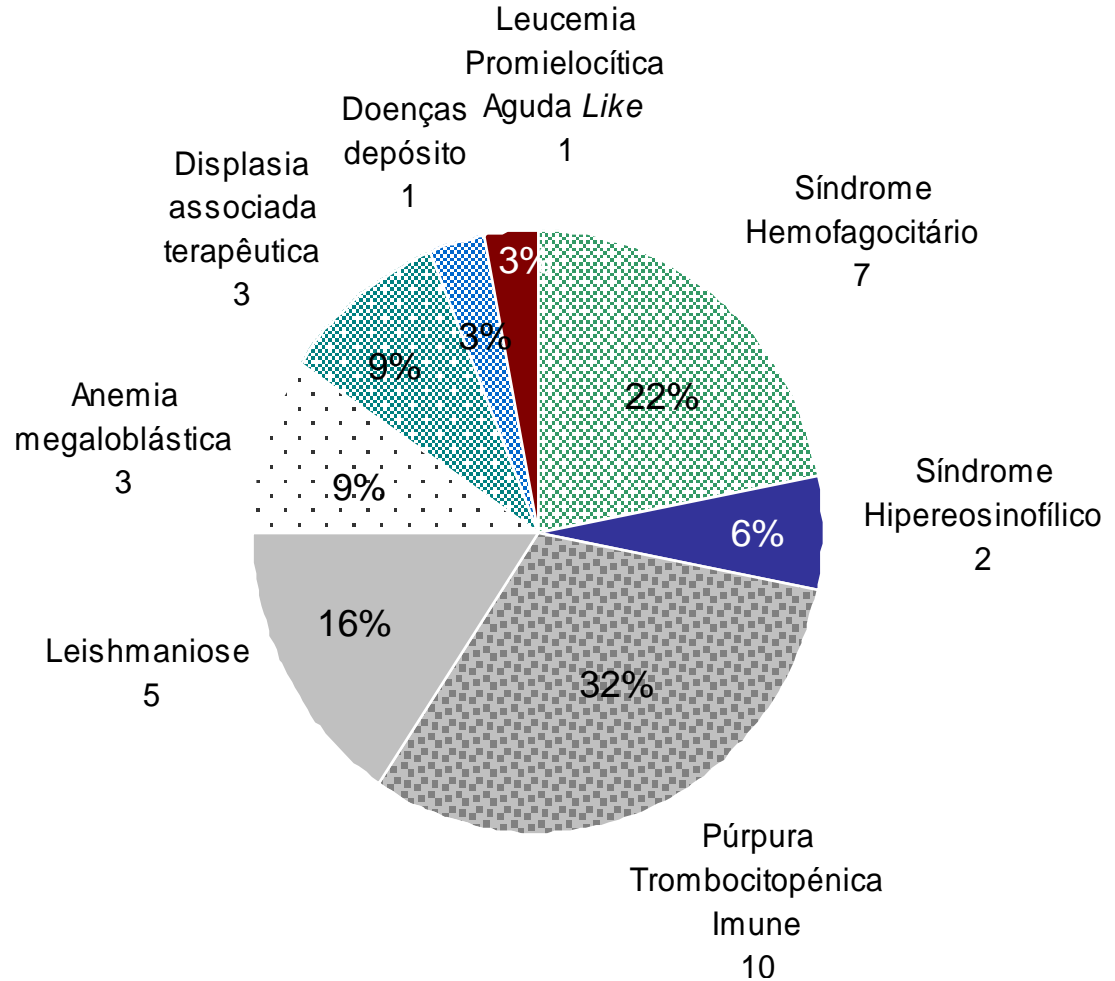


Table 1. WHO classification of myeloid neoplasms and acute leukemia

WHO myeloid neoplasm and acute leukemia classification
Myeloproliferative neoplasms (MPN)
Chronic myeloid leukemia (CML), <i>BCR-ABL1</i> ⁺
Chronic neutrophilic leukemia (CNL)
Polycythemia vera (PV)
Primary myelofibrosis (PMF)
PMF, prefibrotic/early stage
PMF, overt fibrotic stage
Essential thrombocythemia (ET)
Chronic eosinophilic leukemia, not otherwise specified (NOS)
MPN, unclassifiable
Mastocytosis
Myeloid/lymphoid neoplasms with eosinophilia and rearrangement of <i>PDGFRA</i>, <i>PDGFRB</i>, or <i>FGFR1</i>, or with <i>PCM1-JAK2</i>
Myeloid/lymphoid neoplasms with <i>PDGFRA</i> rearrangement
Myeloid/lymphoid neoplasms with <i>PDGFRB</i> rearrangement
Myeloid/lymphoid neoplasms with <i>FGFR1</i> rearrangement
<i>Provisional entity: Myeloid/lymphoid neoplasms with <i>PCM1-JAK2</i></i>
Myelodysplastic/myeloproliferative neoplasms (MDS/MPN)
Chronic myelomonocytic leukemia (CMML)
Atypical chronic myeloid leukemia (aCML), <i>BCR-ABL1</i> ⁻
Juvenile myelomonocytic leukemia (JMML)
MDS/MPN with ring sideroblasts and thrombocytosis (MDS/MPN-RS-T)
MDS/MPN, unclassifiable
Myelodysplastic syndromes (MDS)
MDS with single lineage dysplasia
MDS with ring sideroblasts (MDS-RS)
MDS-RS and single lineage dysplasia
MDS-RS and multilineage dysplasia
MDS with multilineage dysplasia
MDS with excess blasts
MDS with isolated del(5q)
MDS, unclassifiable
<i>Provisional entity: Refractory cytopenia of childhood</i>
Myeloid neoplasms with germ line predisposition
Acute myeloid leukemia (AML) and related neoplasms
AML with recurrent genetic abnormalities
AML with t(8;21)(q22;q22.1); <i>RUNX1-RUNX1T1</i>
AML with inv(16)(p13.1q22) or t(16;16)(p13.1;q22); <i>CBFB-MYH11</i>
APL with <i>PML-RARA</i>
AML with t(9;11)(p21.3;q23.3); <i>MLL2-KMT2A</i>
AML with t(6;9)(p23;q34.1); <i>DEK-NUP214</i>
AML with inv(3)(q21.3q26.2) or t(3;3)(q21.3;q26.2); <i>GATA2, MECOM</i>
AML (megakaryoblastic) with t(1;22)(p13.3;q13.3); <i>RBM15-MKL1</i>
<i>Provisional entity: AML with <i>BCR-ABL1</i></i>
AML with mutated <i>NPM1</i>
AML with biallelic mutations of <i>CEBPA</i>
<i>Provisional entity: AML with mutated <i>RUNX1</i></i>
AML with myelodysplasia-related changes
Therapy-related myeloid neoplasms

AML, NOS
AML with minimal differentiation
AML without maturation
AML with maturation
Acute myelomonocytic leukemia
Acute monoblastic/monocytic leukemia
Pure erythroid leukemia
Acute megakaryoblastic leukemia
Acute basophilic leukemia
Acute panmyelosis with myelofibrosis
Myeloid sarcoma
Myeloid proliferations related to Down syndrome
Transient abnormal myelopoiesis (TAM)
Myeloid leukemia associated with Down syndrome
Acute leukemias of ambiguous lineage
Acute undifferentiated leukemia
Mixed phenotype acute leukemia (MPAL) with t(9;22)(q34.1;q11.2); <i>BCR-ABL1</i>
MPAL with t(v;11q23.3); <i>KMT2A</i> rearranged
MPAL, B/myeloid, NOS
MPAL, T/myeloid, NOS
B-lymphoblastic leukemia/lymphoma
B-lymphoblastic leukemia/lymphoma, NOS
B-lymphoblastic leukemia/lymphoma with recurrent genetic abnormalities
B-lymphoblastic leukemia/lymphoma with t(9;22)(q34.1;q11.2); <i>BCR-ABL1</i>
B-lymphoblastic leukemia/lymphoma with t(v;11q23.3); <i>KMT2A</i> rearranged
B-lymphoblastic leukemia/lymphoma with t(12;21)(p13.2;q22.1); <i>ETV6-RUNX1</i>
B-lymphoblastic leukemia/lymphoma with hyperdiploidy
B-lymphoblastic leukemia/lymphoma with hypodiploidy
B-lymphoblastic leukemia/lymphoma with t(5;14)(q31.1;q32.3) <i>IL3-IGH</i>
B-lymphoblastic leukemia/lymphoma with t(1;19)(q23;p13.3); <i>TCF3-PBX1</i>
<i>Provisional entity: B-lymphoblastic leukemia/lymphoma, <i>BCR-ABL1</i>-like</i>
<i>Provisional entity: B-lymphoblastic leukemia/lymphoma with <i>iAMP21</i></i>
T-lymphoblastic leukemia/lymphoma
<i>Provisional entity: Early T-cell precursor lymphoblastic leukemia</i>
<i>Provisional entity: Natural killer (NK) cell lymphoblastic leukemia/lymphoma</i>

Table 1. 2016 WHO classification of mature lymphoid, histiocytic, and dendritic neoplasms

Mature B-cell neoplasms

Chronic lymphocytic leukemia/small lymphocytic lymphoma
Monoclonal B-cell lymphocytosis*
B-cell prolymphocytic leukemia
Splenic marginal zone lymphoma
Hairy cell leukemia
<i>Splenic B-cell lymphoma/leukemia, unclassifiable</i>
<i>Splenic diffuse red pulp small B-cell lymphoma</i>
<i>Hairy cell leukemia-variant</i>
Lymphoplasmacytic lymphoma
Waldenström macroglobulinemia
Monoclonal gammopathy of undetermined significance (MGUS), IgM*
μ heavy-chain disease
γ heavy-chain disease
α heavy-chain disease
Monoclonal gammopathy of undetermined significance (MGUS), IgG/A*
Plasma cell myeloma
Solitary plasmacytoma of bone
Extrasosseous plasmacytoma
Monoclonal immunoglobulin deposition diseases*
Extranodal marginal zone lymphoma of mucosa-associated lymphoid tissue (MALT lymphoma)
Nodal marginal zone lymphoma
<i>Pediatric nodal marginal zone lymphoma</i>
Follicular lymphoma
<i>In situ follicular neoplasia*</i>
<i>Duodenal-type follicular lymphoma*</i>
<i>Pediatric-type follicular lymphoma*</i>
<i>Large B-cell lymphoma with IRF4 rearrangement*</i>
Primary cutaneous follicle center lymphoma
Mantle cell lymphoma
<i>In situ mantle cell neoplasia*</i>
Diffuse large B-cell lymphoma (DLBCL), NOS
Germinal center B-cell type*
Activated B-cell type*
T-cell/histiocyte-rich large B-cell lymphoma
Primary DLBCL of the central nervous system (CNS)
Primary cutaneous DLBCL, leg type
EBV ⁺ DLBCL, NOS*
<i>EBV⁺ mucocutaneous ulcer*</i>
DLBCL associated with chronic inflammation
Lymphomatoid granulomatosis
Primary mediastinal (thymic) large B-cell lymphoma
Intravascular large B-cell lymphoma
ALK ⁺ large B-cell lymphoma
Plasmablastic lymphoma
Primary effusion lymphoma
<i>HHV8⁺ DLBCL, NOS*</i>
Burkitt lymphoma
<i>Burkitt-like lymphoma with 11q aberration*</i>
High-grade B-cell lymphoma, with MYC and BCL2 and/or BCL6 rearrangements*
High-grade B-cell lymphoma, NOS*
B-cell lymphoma, unclassifiable, with features intermediate between DLBCL and classical Hodgkin lymphoma

Mature T and NK neoplasms

T-cell prolymphocytic leukemia
T-cell large granular lymphocytic leukemia
<i>Chronic lymphoproliferative disorder of NK cells</i>
Aggressive NK-cell leukemia
Systemic EBV ⁺ T-cell lymphoma of childhood*
Hydroa vacciniforme-like lymphoproliferative disorder*
Adult T-cell leukemia/lymphoma
Extranodal NK-/T-cell lymphoma, nasal type
Enteropathy-associated T-cell lymphoma
Monomorphic epitheliotropic intestinal T-cell lymphoma*
<i>Indolent T-cell lymphoproliferative disorder of the GI tract</i>
Hepatosplenic T-cell lymphoma
Subcutaneous panniculitis-like T-cell lymphoma
Mycosis fungoides
Sézary syndrome
Primary cutaneous CD30 ⁺ T-cell lymphoproliferative disorders
Lymphomatoid papulosis
Primary cutaneous anaplastic large cell lymphoma
Primary cutaneous γδ T-cell lymphoma
<i>Primary cutaneous CD8⁺ aggressive epidermotropic cytotoxic T-cell lymphoma</i>
<i>Primary cutaneous acral CD8⁺ T-cell lymphoma*</i>
<i>Primary cutaneous CD4⁺ small/medium T-cell lymphoproliferative disorder*</i>
Peripheral T-cell lymphoma, NOS
Angioimmunoblastic T-cell lymphoma
<i>Follicular T-cell lymphoma*</i>
<i>Nodal peripheral T-cell lymphoma with TFH phenotype*</i>
Anaplastic large-cell lymphoma, ALK ⁺
Anaplastic large-cell lymphoma, ALK ⁻ *
<i>Breast implant-associated anaplastic large-cell lymphoma*</i>

Hodgkin lymphoma

Nodular lymphocyte predominant Hodgkin lymphoma
Classical Hodgkin lymphoma
Nodular sclerosis classical Hodgkin lymphoma
Lymphocyte-rich classical Hodgkin lymphoma
Mixed cellularity classical Hodgkin lymphoma
Lymphocyte-depleted classical Hodgkin lymphoma

Posttransplant lymphoproliferative disorders (PTLD)

Plasmacytic hyperplasia PTLD
Infectious mononucleosis PTLD
Florid follicular hyperplasia PTLD*
Polymorphic PTLD
Monomorphic PTLD (B- and T-/NK-cell types)
Classical Hodgkin lymphoma PTLD

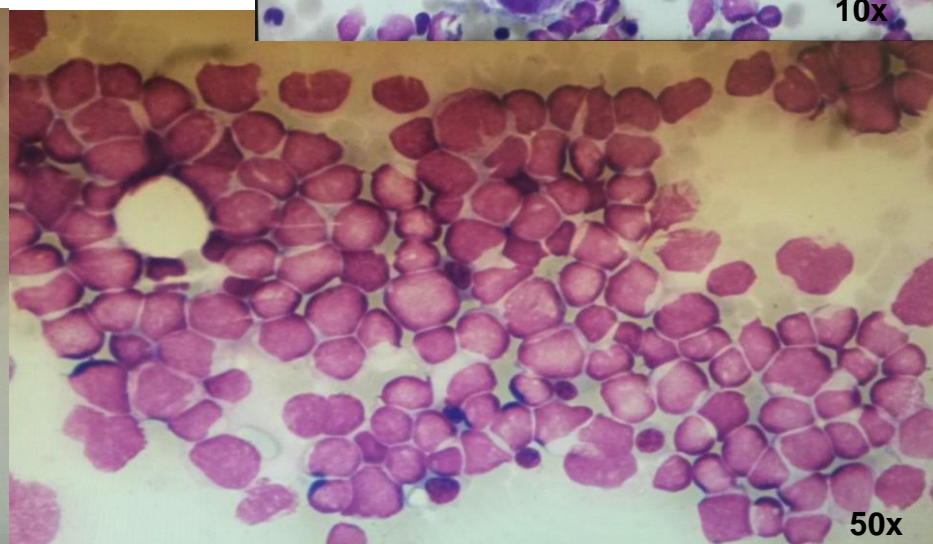
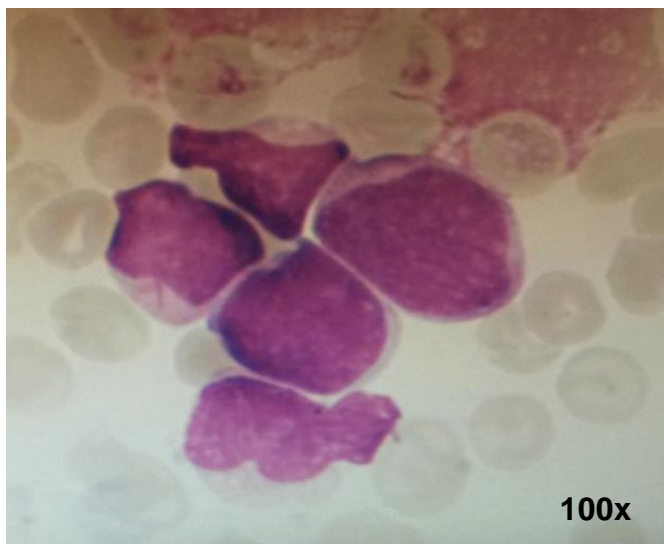
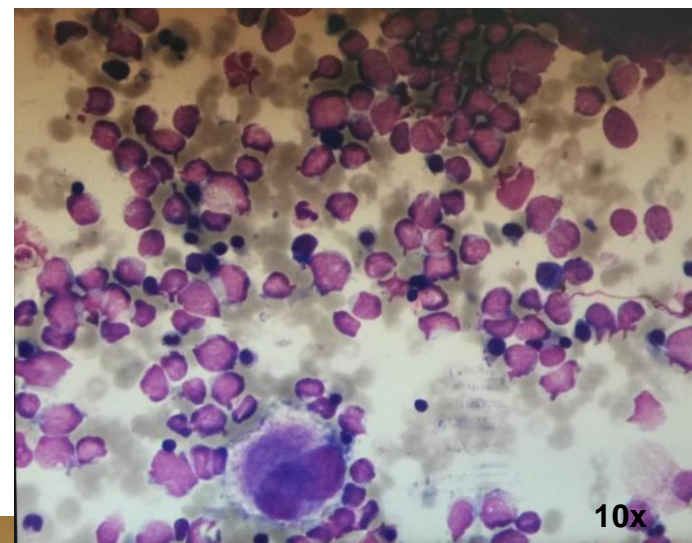
Histiocytic and dendritic cell neoplasms

Histiocytic sarcoma
Langerhans cell histiocytosis
Langerhans cell sarcoma
Indeterminate dendritic cell tumor
Interdigitating dendritic cell sarcoma
Follicular dendritic cell sarcoma
Fibroblastic reticular cell tumor
Disseminated juvenile xanthogranuloma
Erdheim-Chester disease*

Mielogramas no HFF

Casos clínicos- Leucemia Mielóide Aguda

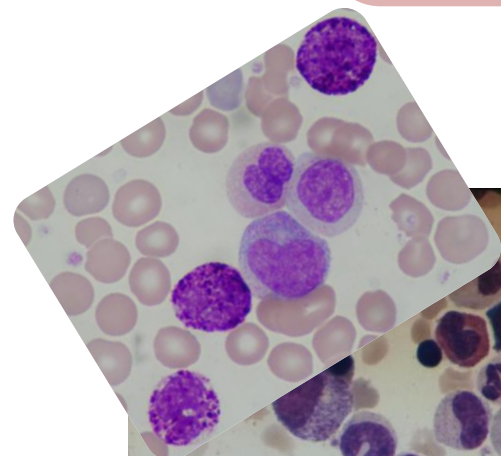
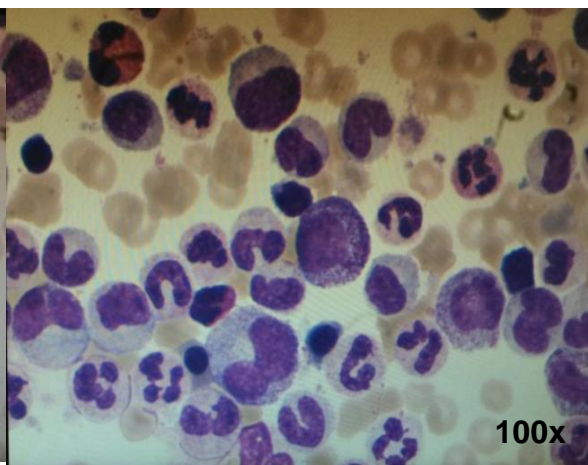
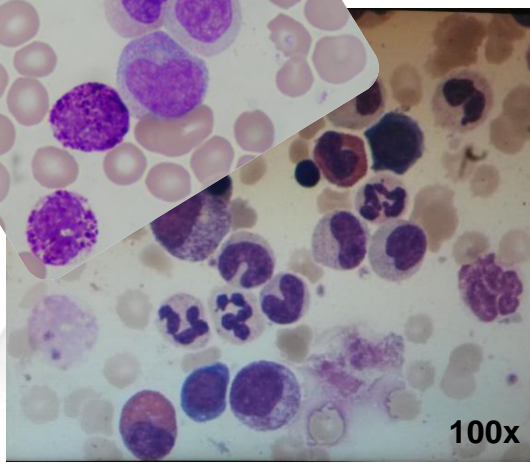
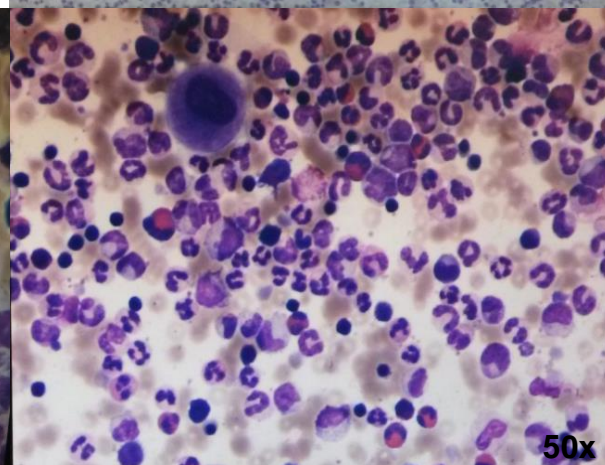
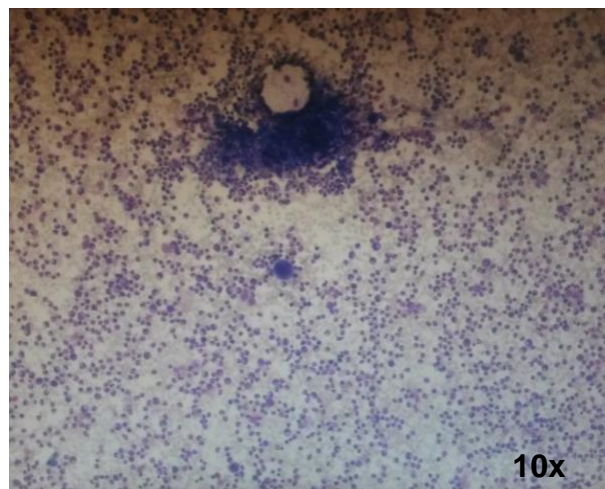
M.A., 51 anos
Bicitopénia.



Mielogramas no HFF

Casos clínicos- Leucemia Mielóide Crónica

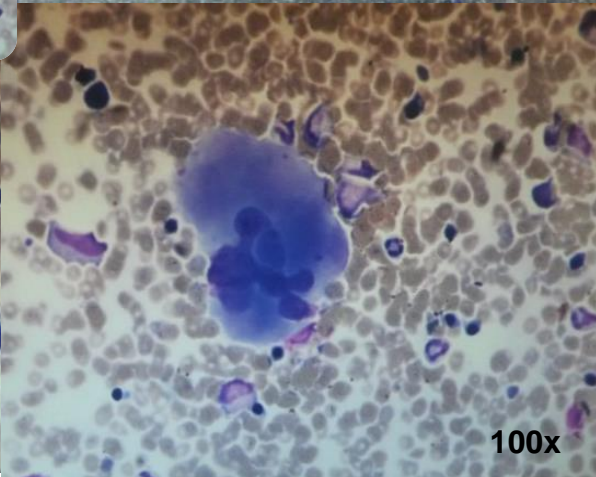
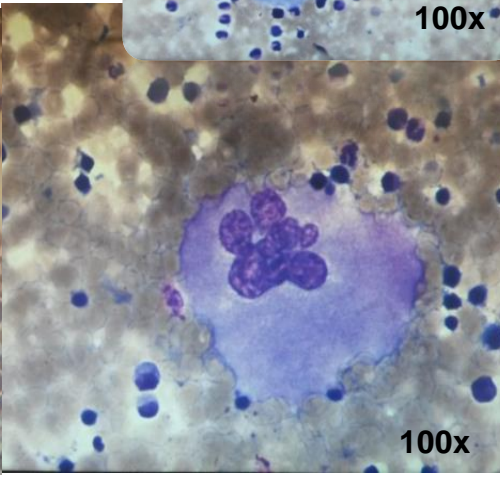
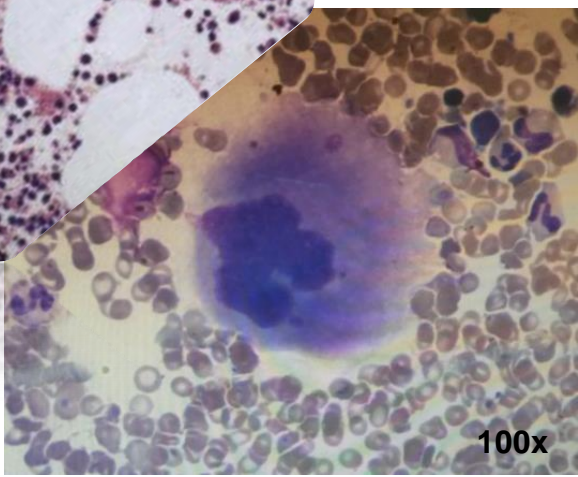
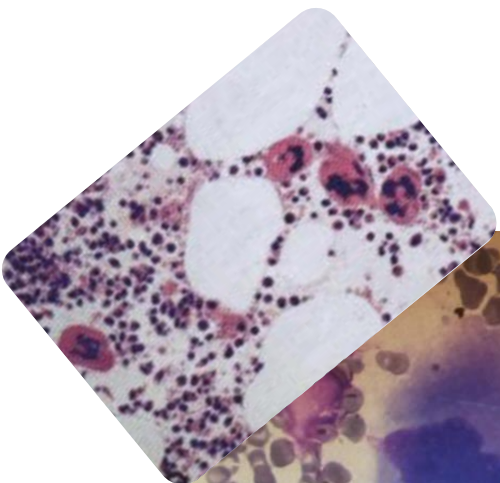
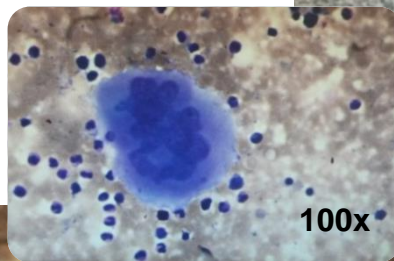
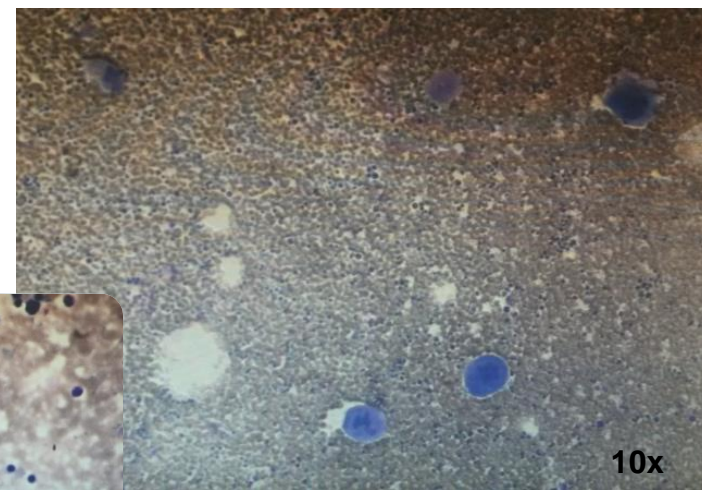
E.A., 50 anos
Leucocitose
e trombocitose.
Suspeita de Neoplasia
Mieloproliferativa?



Mielogramas no HFF

Casos clínicos- Trombocitemia Essencial

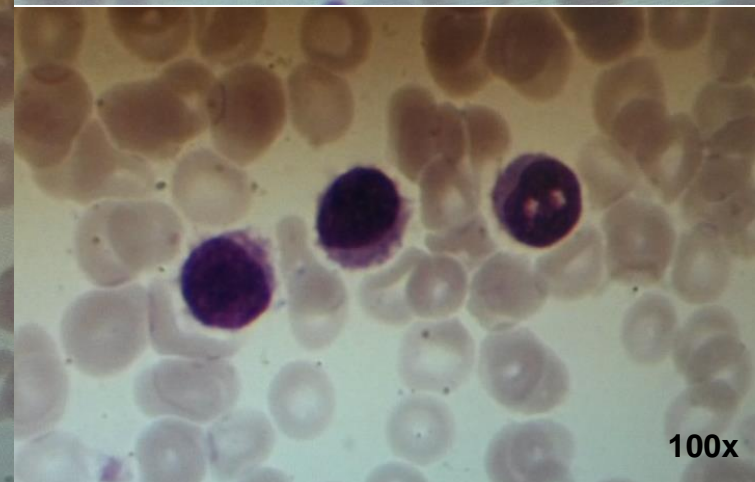
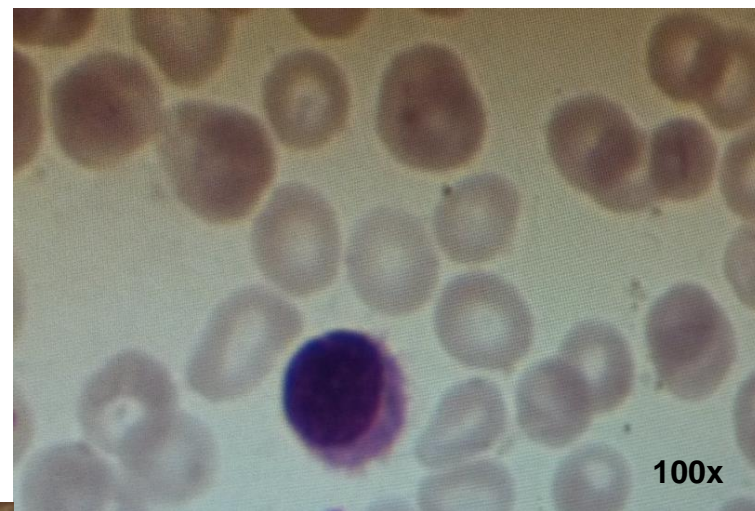
L.M., 74 anos
Trombocitose,
tromboembolismo pulmonar
e trombose venosa
profunda prévios.



Mielogramas no HFF

Casos clínicos- Tricoleucemia

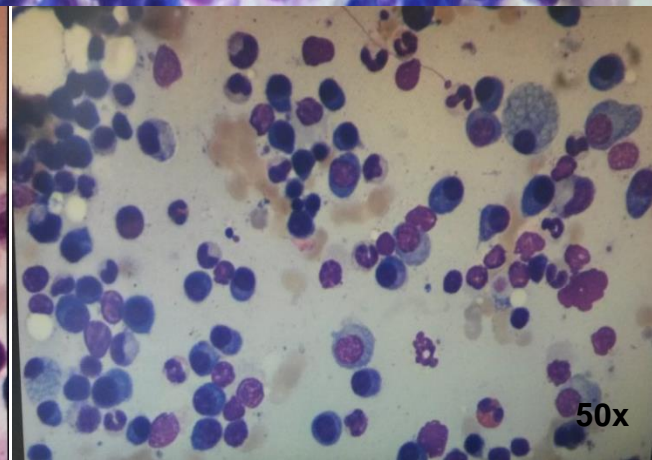
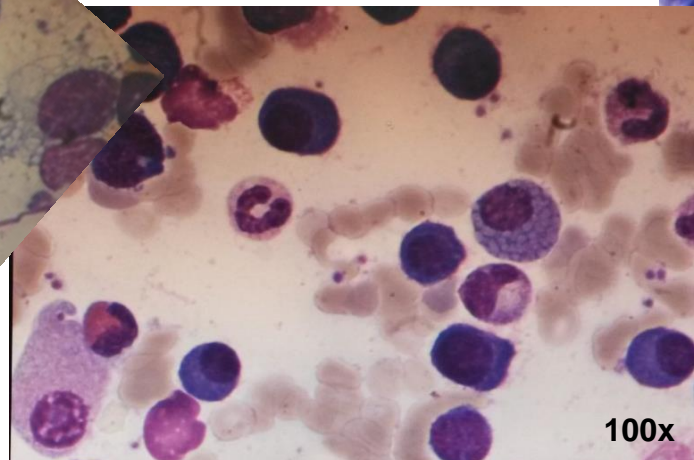
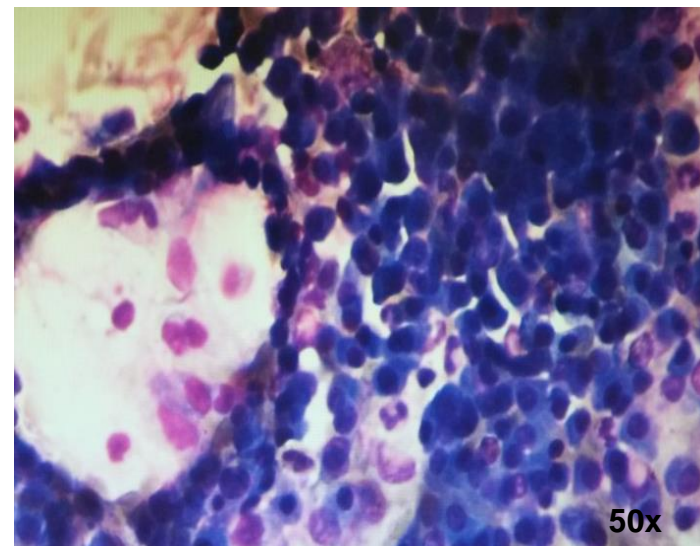
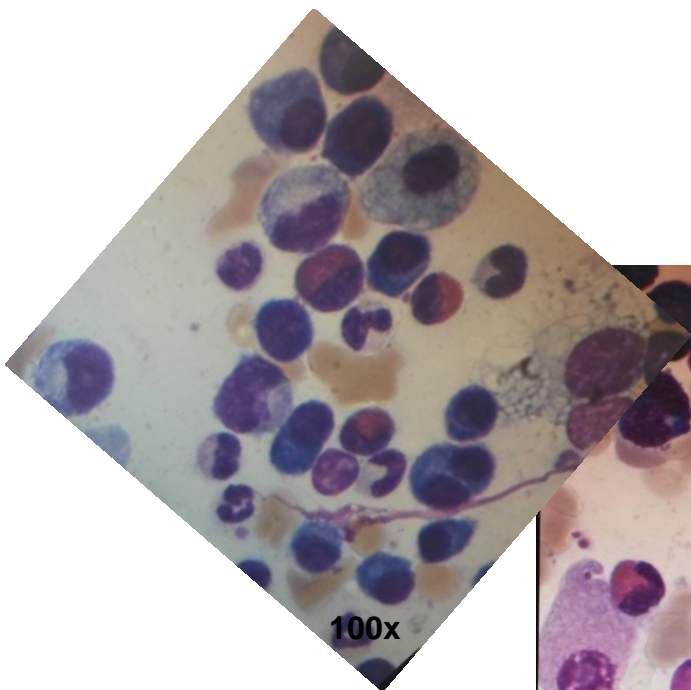
C.F., 36 anos
Bicitopénia,
hepatoesplenomegália.



Mielogramas no HFF

Casos clínicos- Mieloma Múltiplo

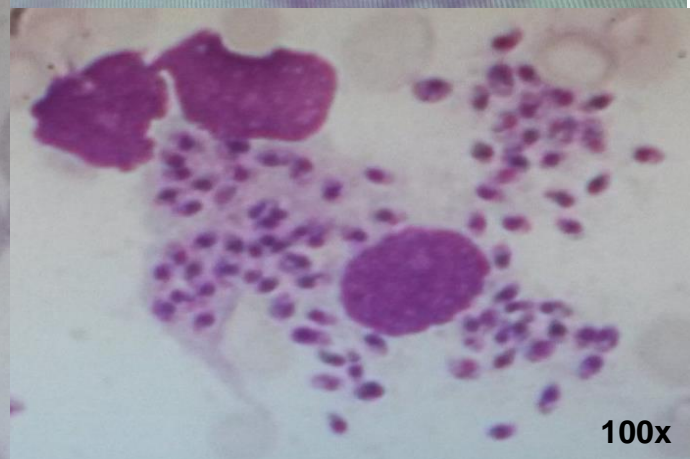
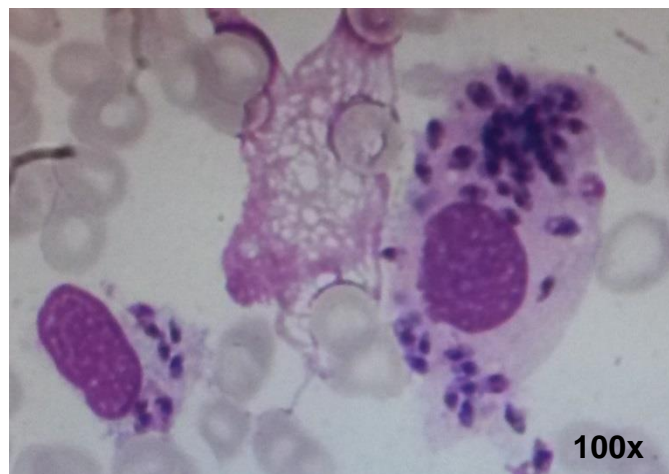
L.C., 62 anos
Gamapatia monoclonal
IgG/k, hipercalcémia.



Mielogramas no HFF

Casos clínicos- Leishmaniose

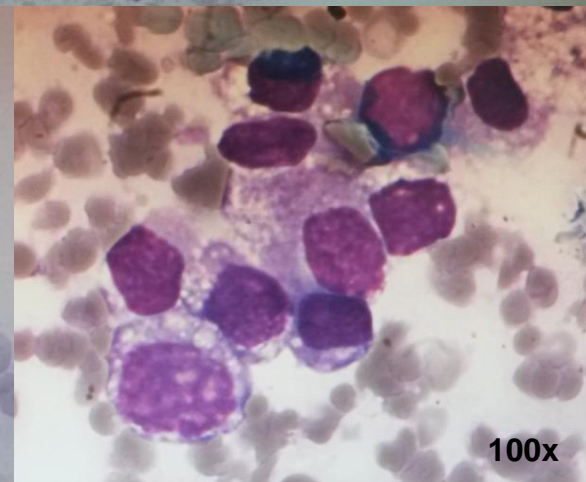
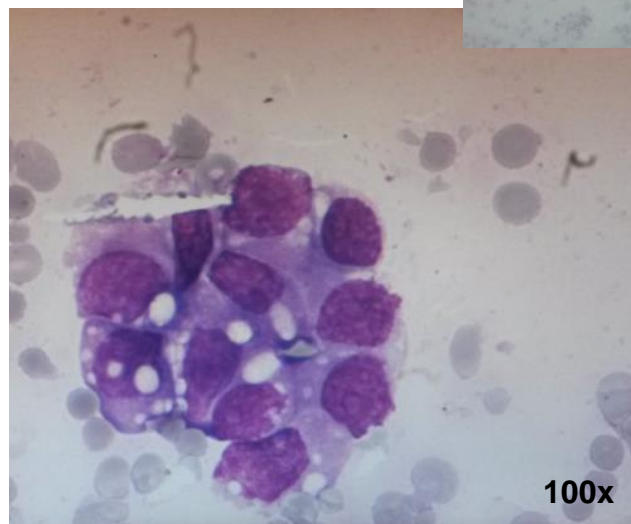
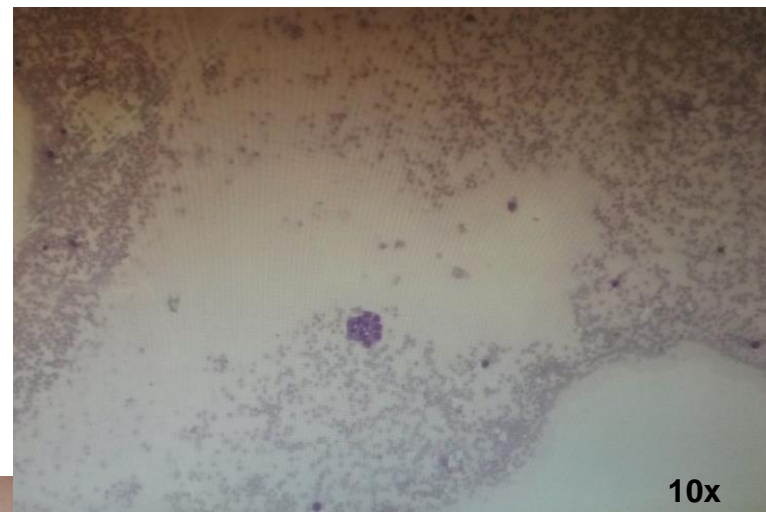
A.C., 56 anos
Pancitopénia,
hepatomegália
HIV+.



Mielogramas no HFF

Casos clínicos- Metástases Carcinoma da Próstata

R.N., 62 anos
Neoplasia da Próstata com
metastização óssea,
trombocitopénia.
Suspeita de Invasão Medular?



Mielogramas no HFF

Muito Obrigada!