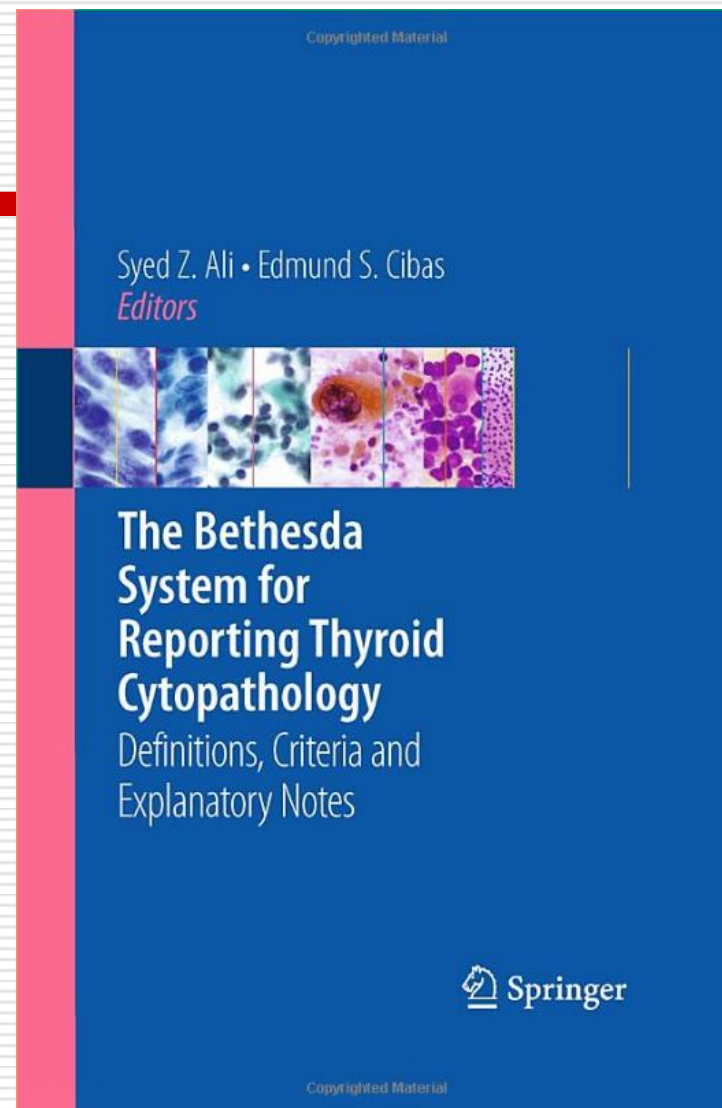


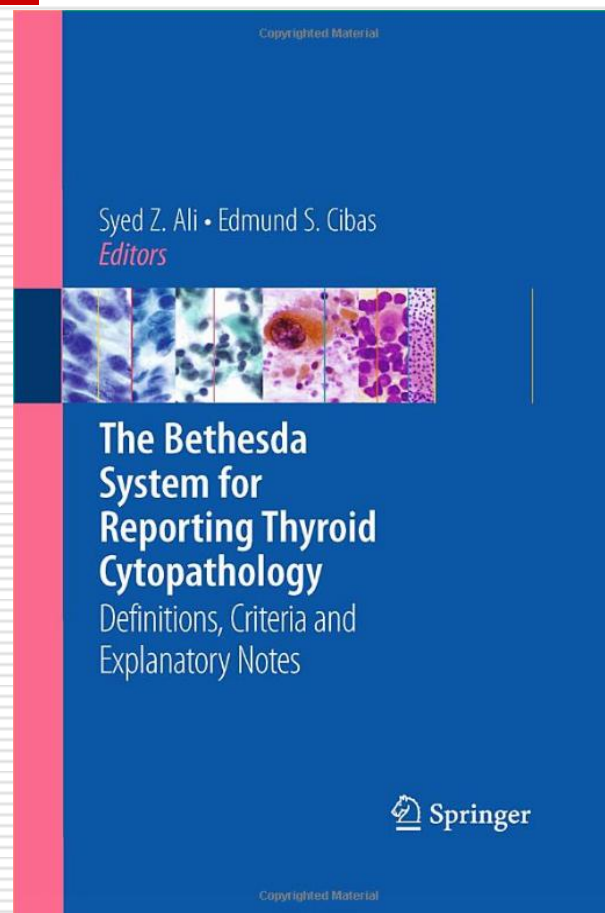
BENIGNO

Živka Eri



Bethesda System for Reporting Thyroid Cytopathology

- **Non-diagnostic or Unsatisfactory**
- **Benign**
- **Atypia / Follicular Lesion of Undetermined Significance**
- **Follicular (HC) Neoplasm / Suspicious for Follicular (HC) Neoplasm**
- **Suspicious for Malignancy**
- **Malignancy**



Benign diagnostic category II

- ❑ Consistent with a benign follicular nodule
- ❑ Consistent with chronic lymphocytic (Hashimoto) thyroiditis in the proper clinical context
- ❑ Consistent with granulomatous (subacute) thyroiditis
- ❑ Others
 - Acute thyroiditis,
 - Riedel thyroiditis/disease

Benigni folikularni nodus

- Najčešće dijagnostikovan entitet
 - Obuhvata benigne lezije sa sličnim citološkim obeležjima, histološki klasifikovanim kao:
 - koloidni nodusi,
 - hiperplastični (adenomatoidni) nodusi,
 - nodusi u Gravesovoj bolesti,
 - nodozna struma.
-

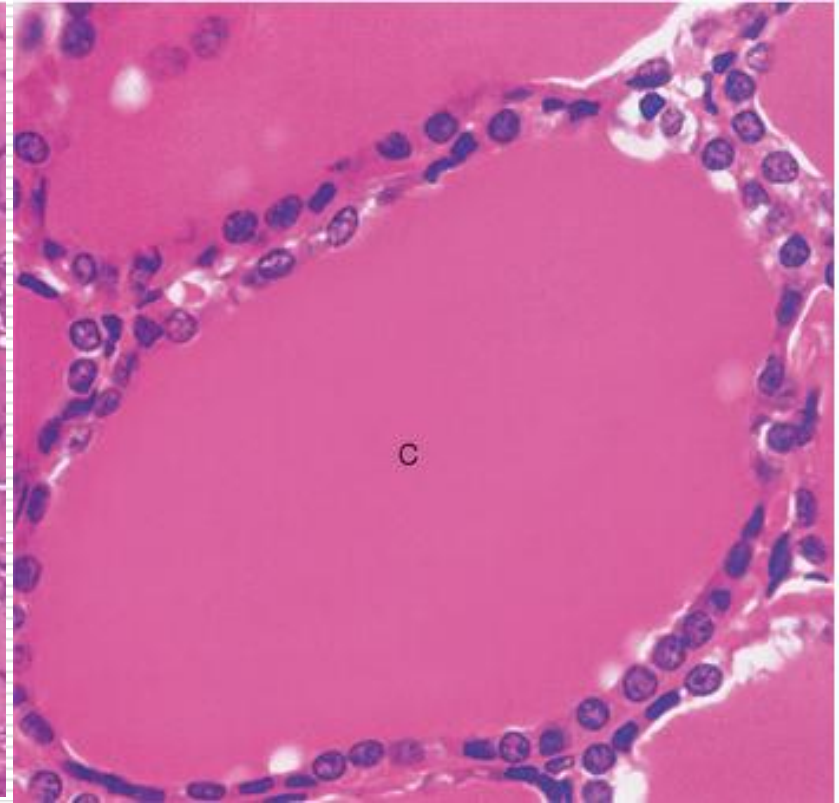
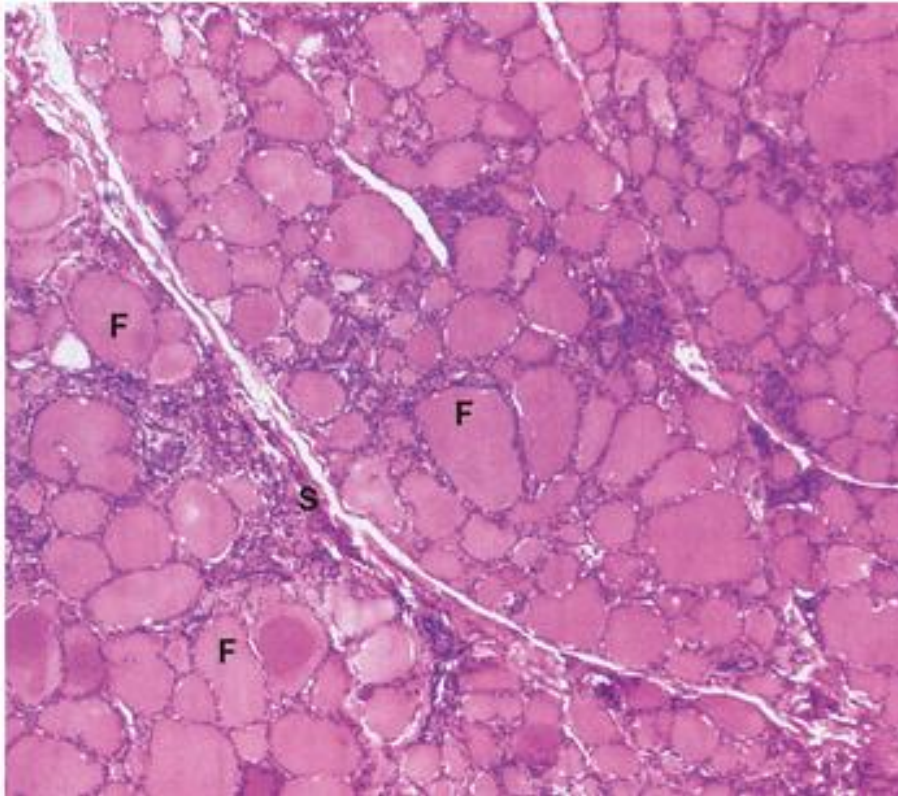
Benigni folikularni nodus

Definicija

BFN

- ❑ Citološki uzorak adekvatan za evaluaciju sagrađen predominantno od koloida i folikularnih ćelija benignog izgleda u različitoj proporciji
-

Histologija štitaste žlezde

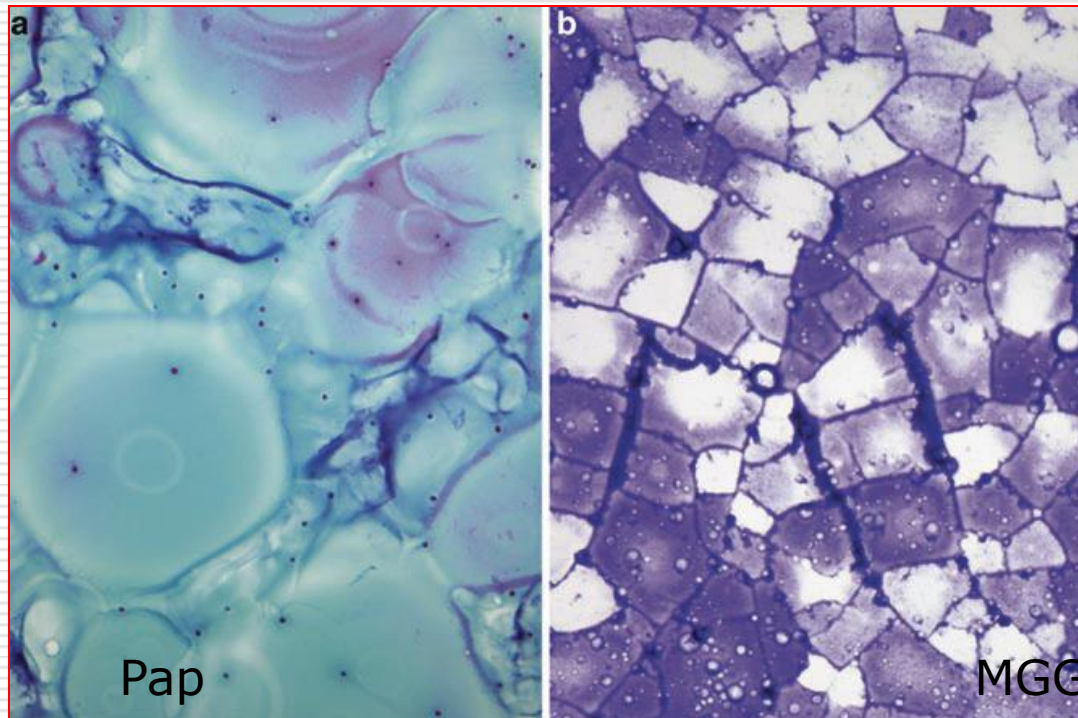


Kriterijumi BFN

- Oskudni do umereno celularni razmazi
 - Koloid
 - Folikularne ćelije
 - Hürthle ćelije (onkociti)
 - Makrofagi
 - Fokalne reparatorne promene epitela u cističnim lezijama
-

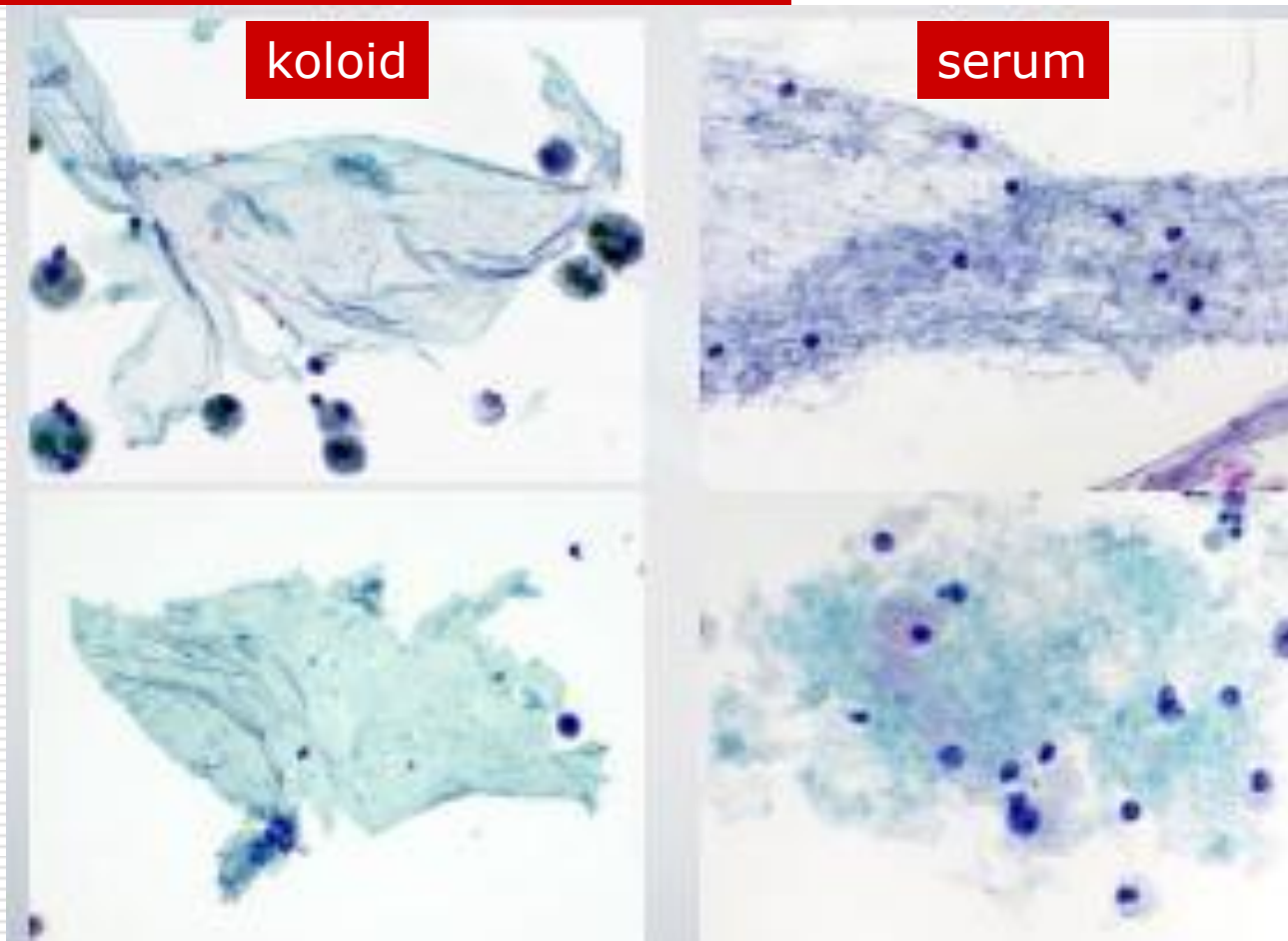
Koloid u BFN

- Koloid je viskozan,
 - tamnoplav-ljubičast (Romanowsky-tip bojenja) ili
 - zeleno-plav do oranž-ružičast (Papanicolaou bojenje)



Nežni vodenasti koloid često formira sloj nalik celofanu, kaldrmi ili mozaiku

Koloid se "gužva" i "lomi" i grupiše oko folikularnih ćelija

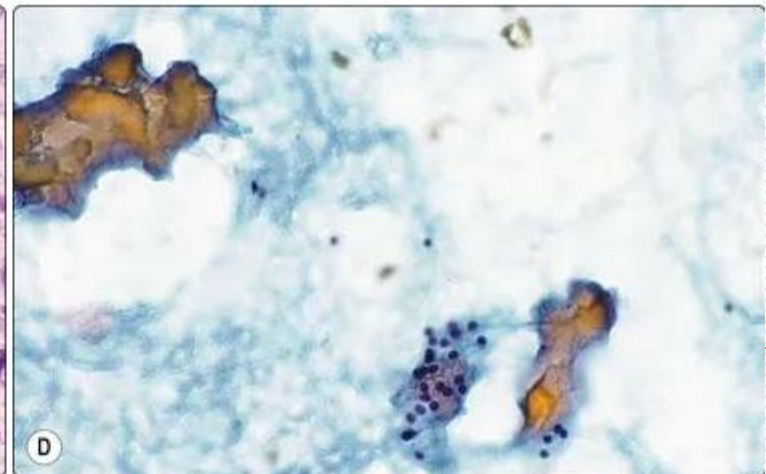
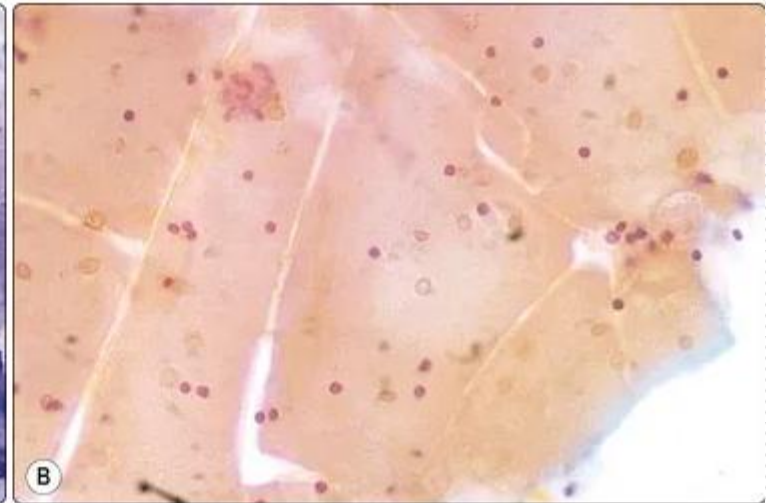
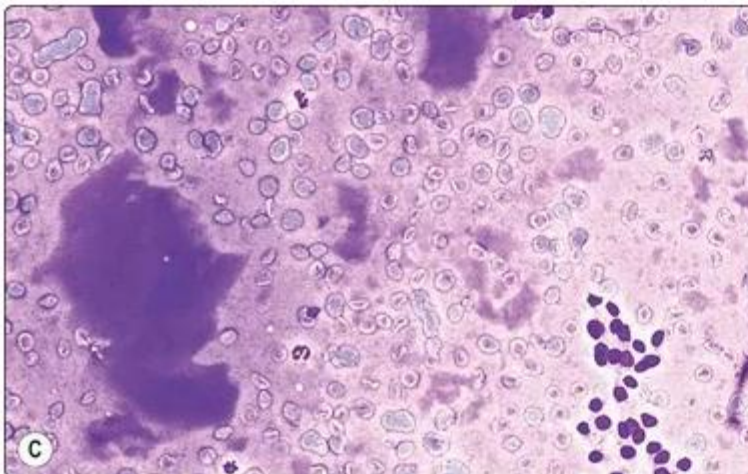
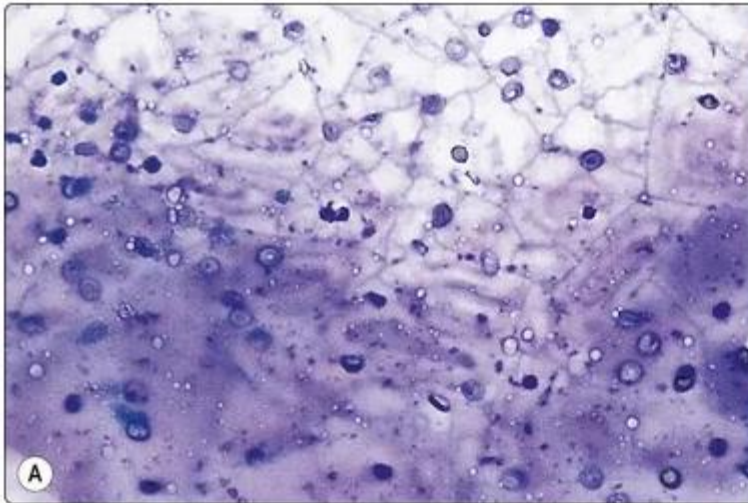


Serum se akumulira oko trombocita, fibrina, na rubovima preparata

Koloid u BFN

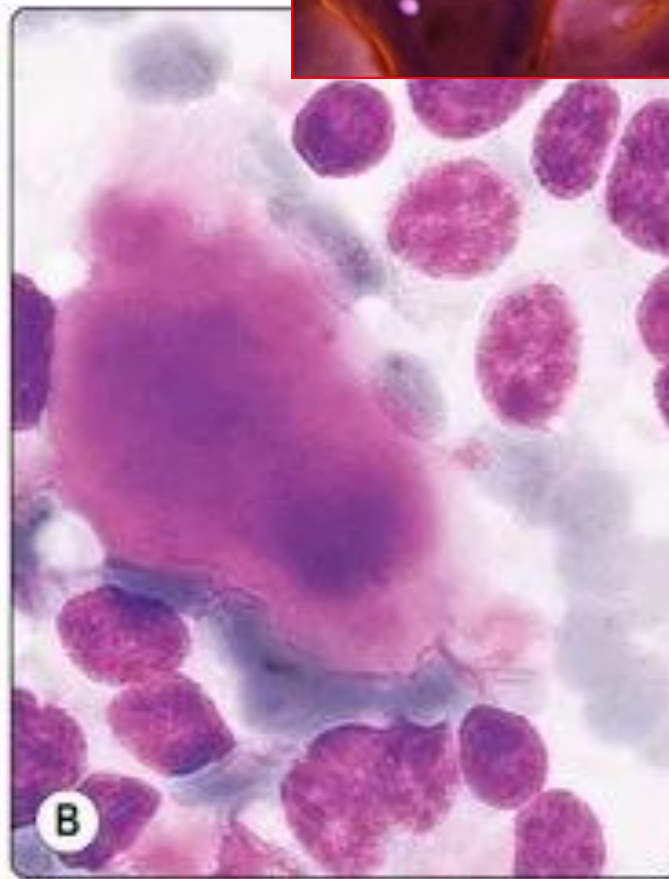
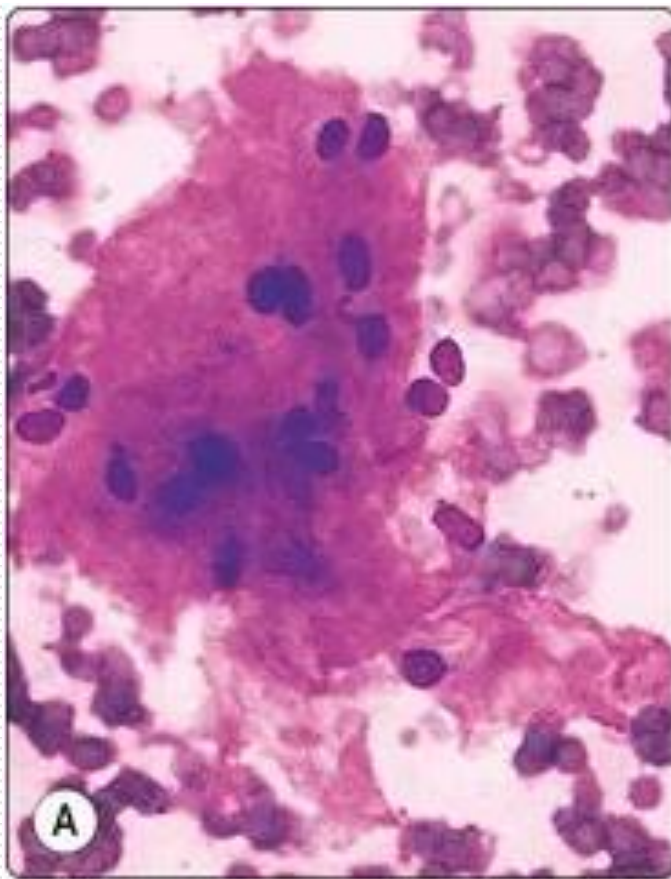
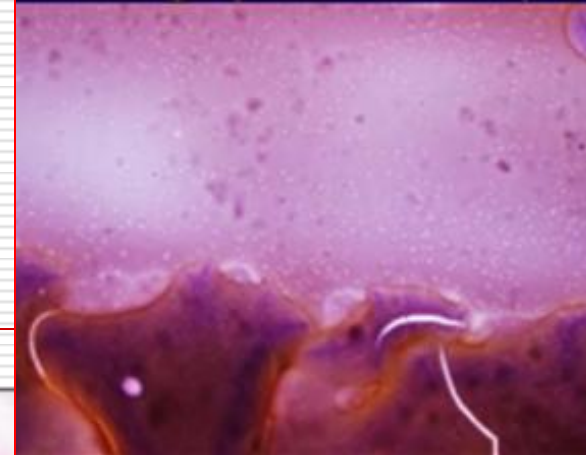
- Može biti debele hijaline teksture

MGG



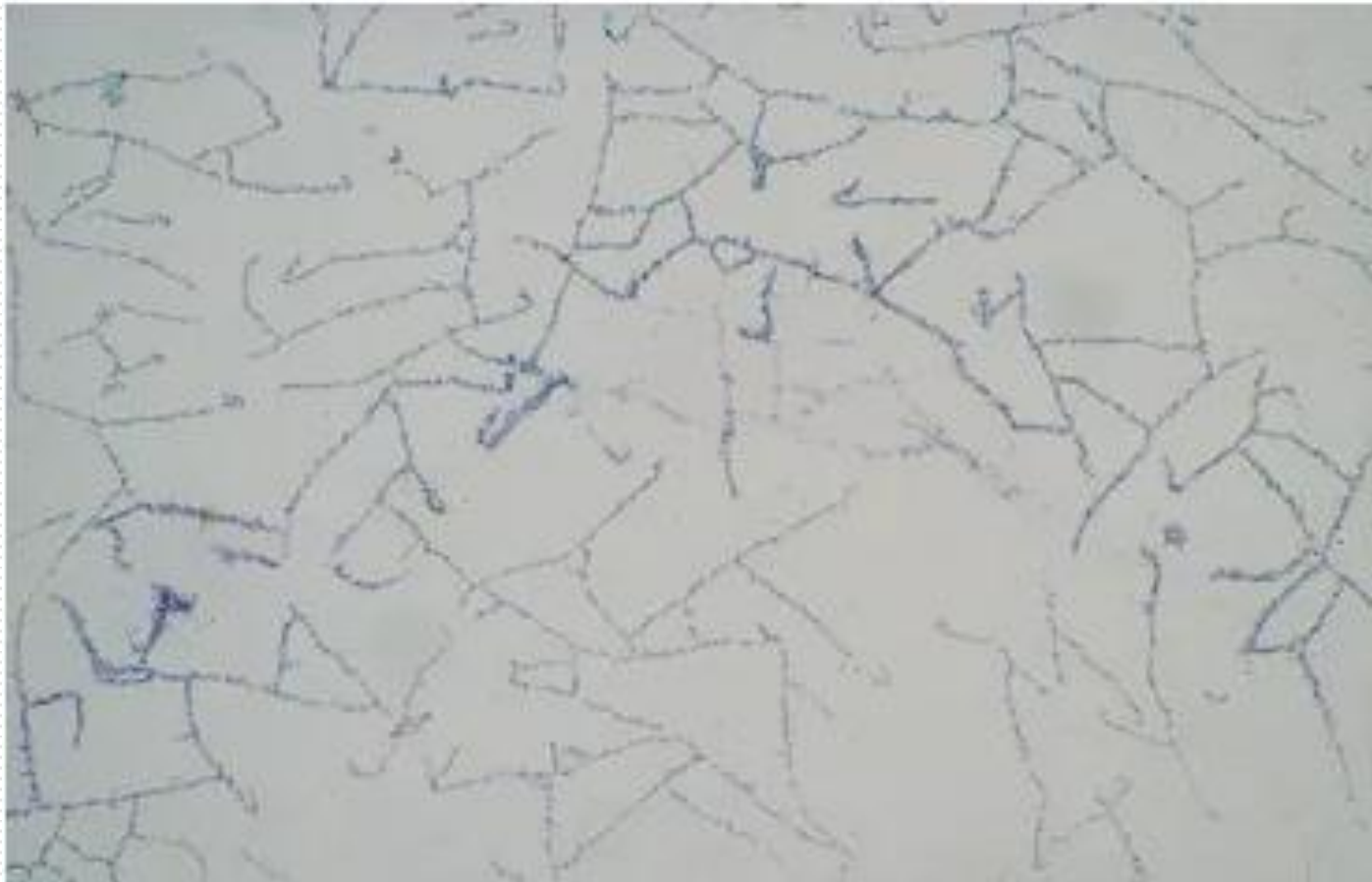
Pap

Hijalini koloid



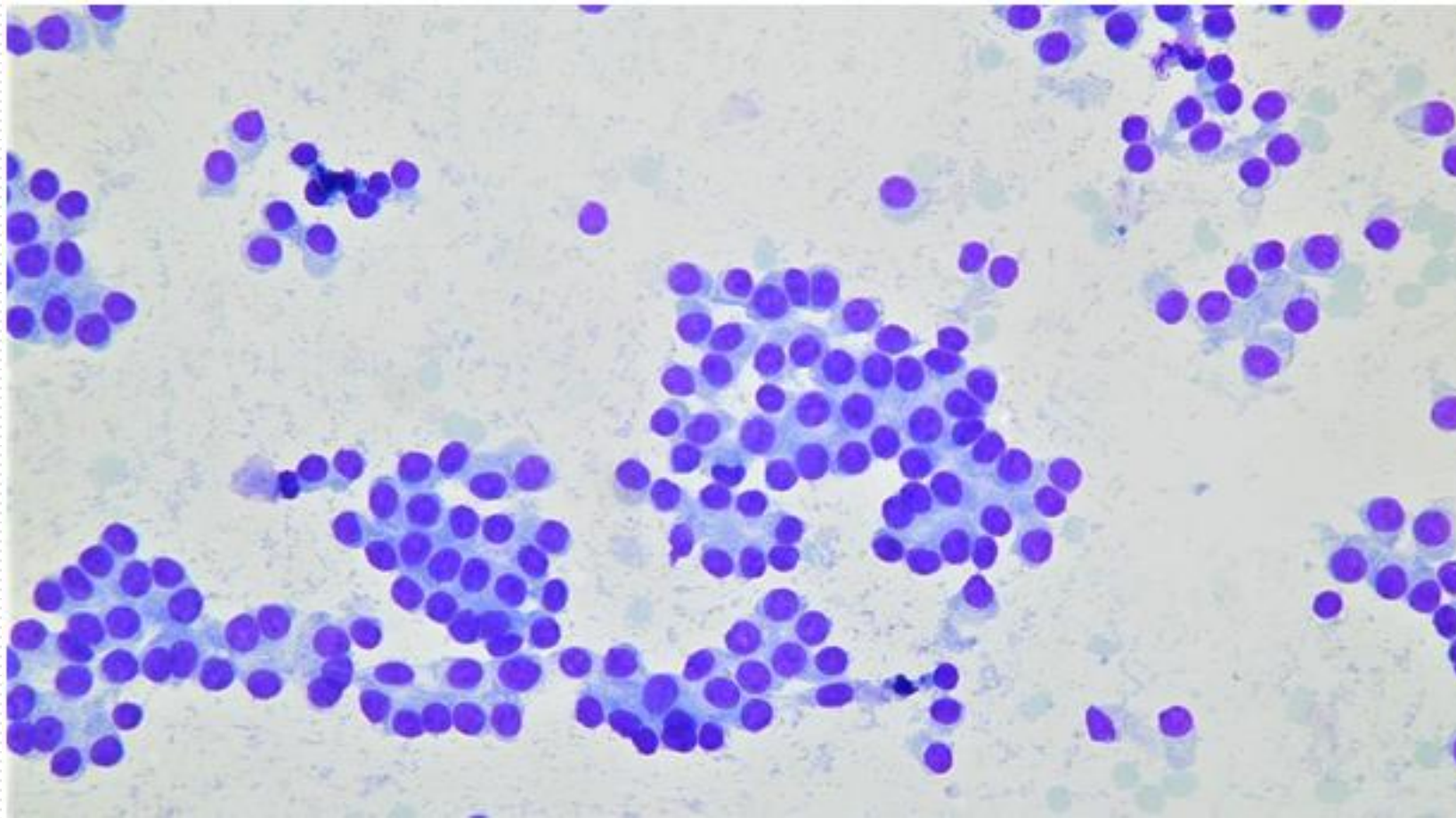
- (A) Fragment kolagene strome;** fibrilarna tekstura; jedara uključeno (MGG)
(B) Amiloid u medularnom karcinomu, bezstrukturna, nehomogeno hijalina (MGG)

"Ghost-image" koloid



Gubitak koloida rezultira "ghost image" formiraju eritrociti (MGG).

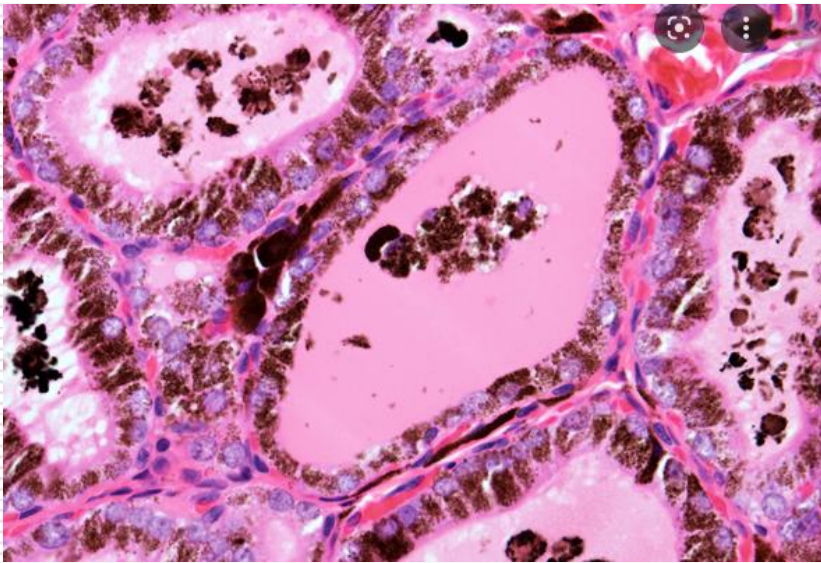
Folikularne ćelije u BFN



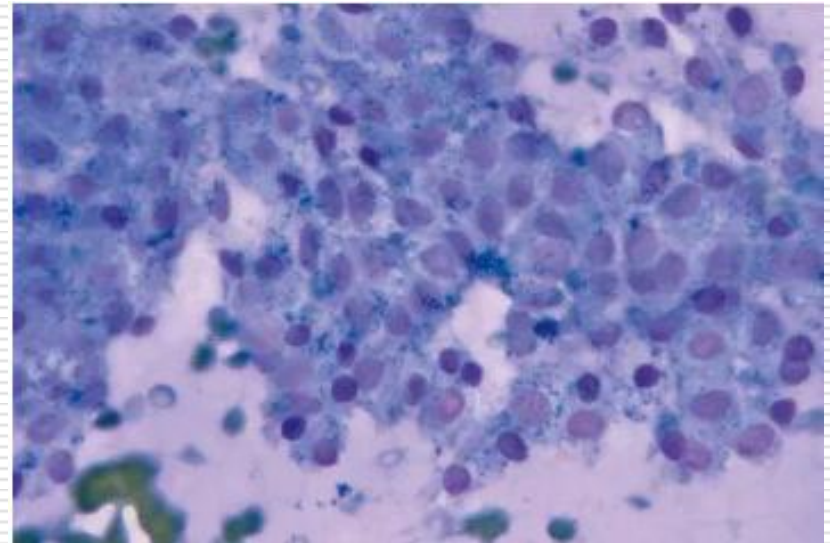
sitne, ovalne ili okrugle ćelije, oskudne do srednje obilne fine sivo-plave ili svetlo plave citoplazme, nejasnih granica.

Folikularne ćelije u BFN

HE

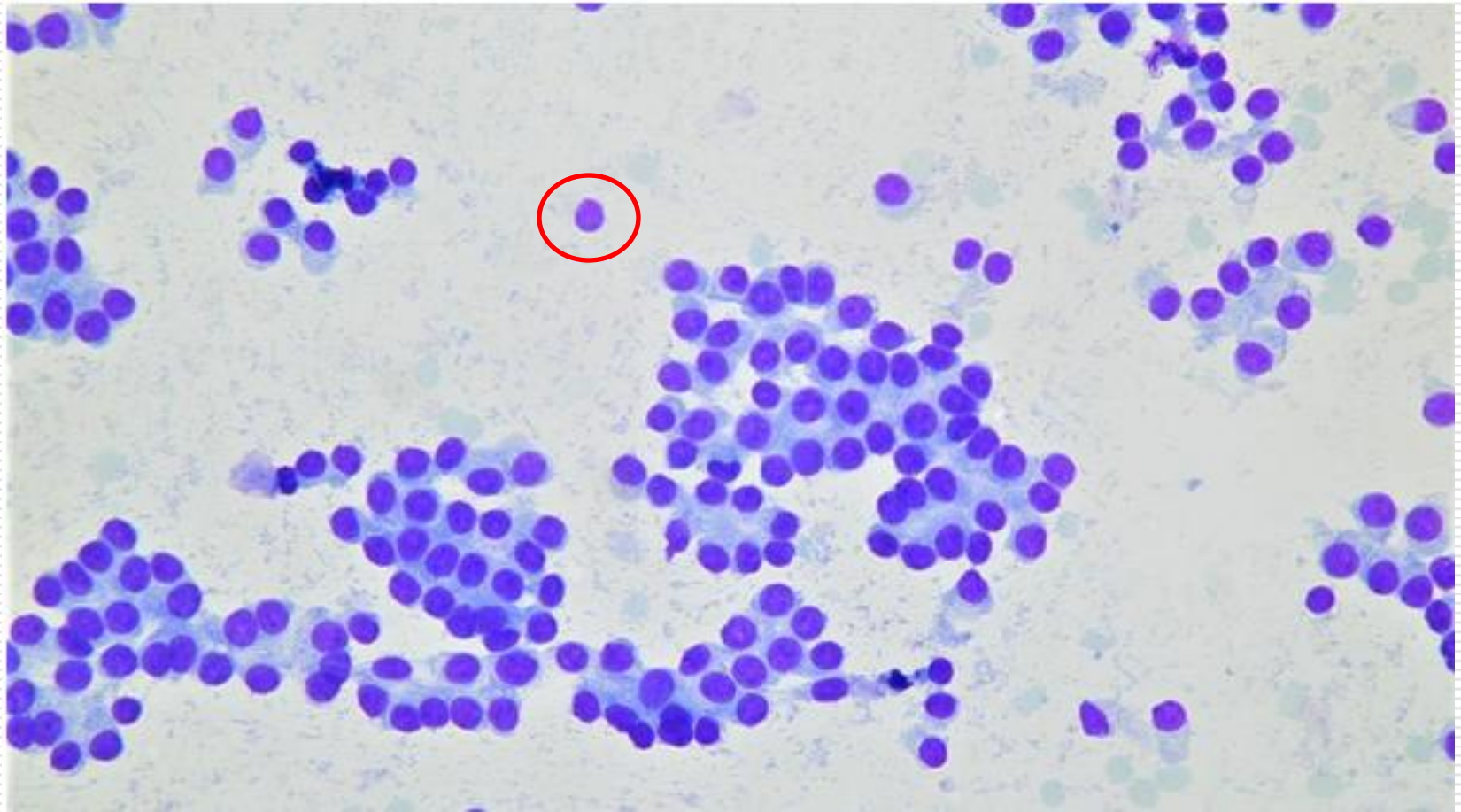


MGG



Intracitoplazmatske zelenkasto crne granule lipofuscina i/ili hemosiderina

Folikularne ćelije u BFN



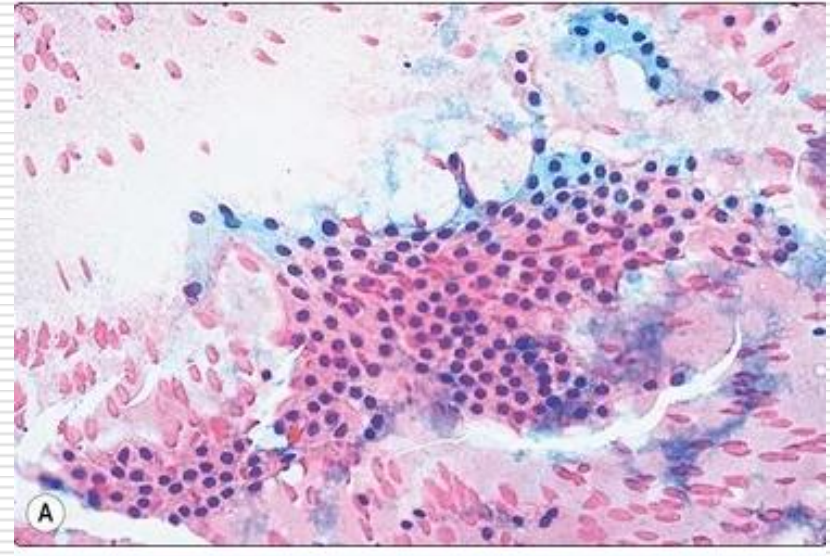
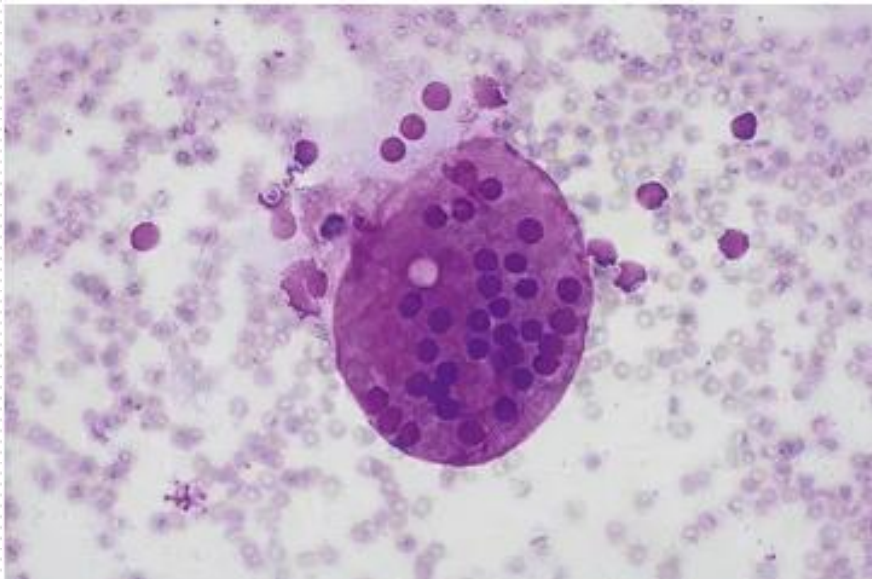
Jedra su tamna, ovalna do okrugla (približno veličine eritrocita), uniformnog zrnastog hromatina. **Gola limfocit-like jedra**

Folikularne ćelije u BFN

- Folikularne ćelije aranžirane u:
 - makrofolikularni *pattern*
 - 3D nakupine
 - kao pojedinačne ćelije
 - retko mikrofolikularni *pattern*
-

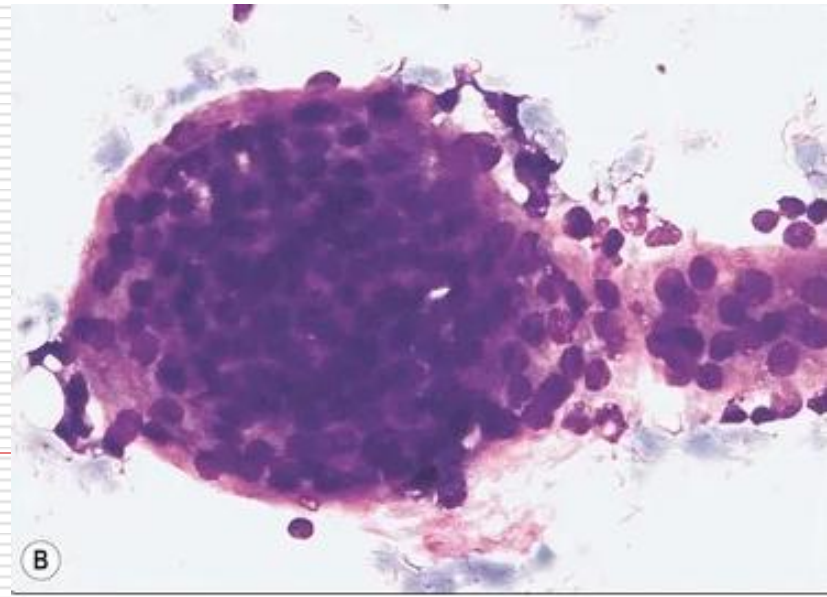
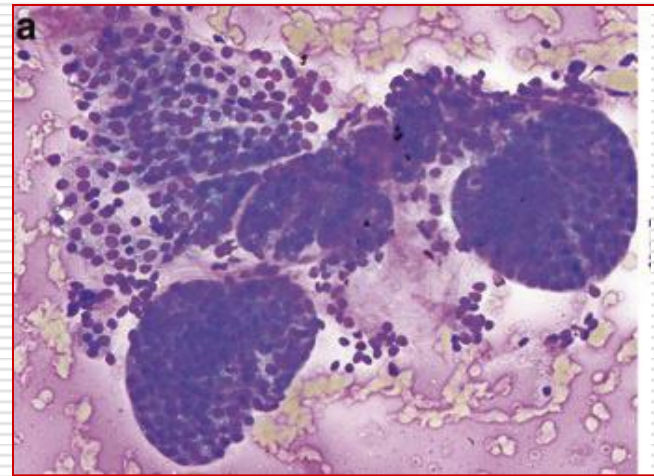
Folikularne ćelije u BFN

- Makrofolikularni *pattern*
 - *Jednoslojne saćaste nakupine*
 - *Klasteri*
 - *Intaktni folikuli- pseudo džinovska ćelija*



Folikularne ćelije u BFN

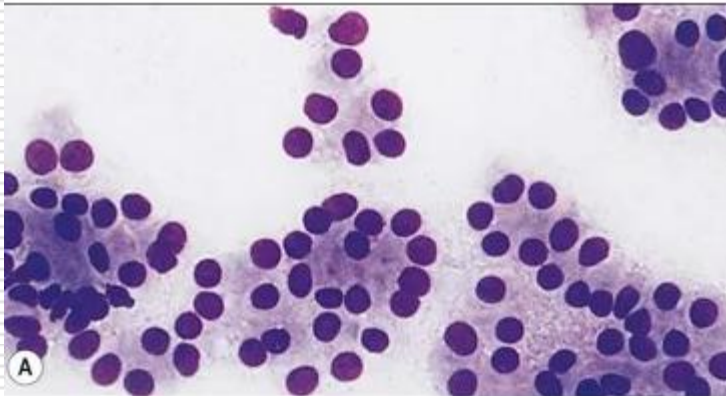
- 3D nakupine
- Minimalno jedarno nagomilavanje i preklapanje



Mikrofolikularni *pattern*

Rozete

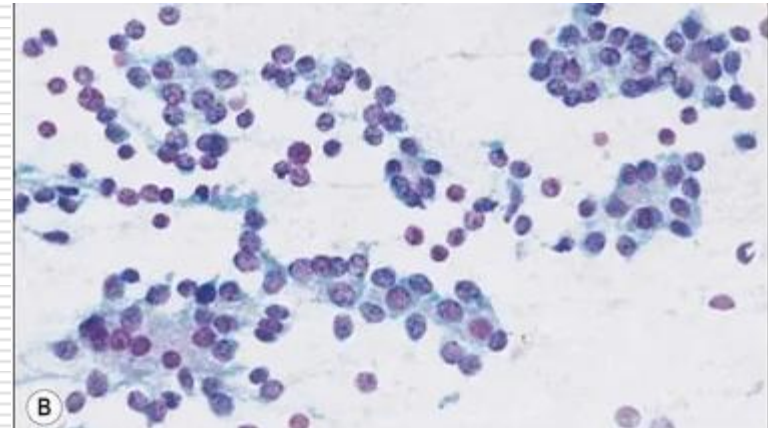
- Mikroacinarni aranžman bez jasno formiranog lumena



MGG

Mikrofolikuli

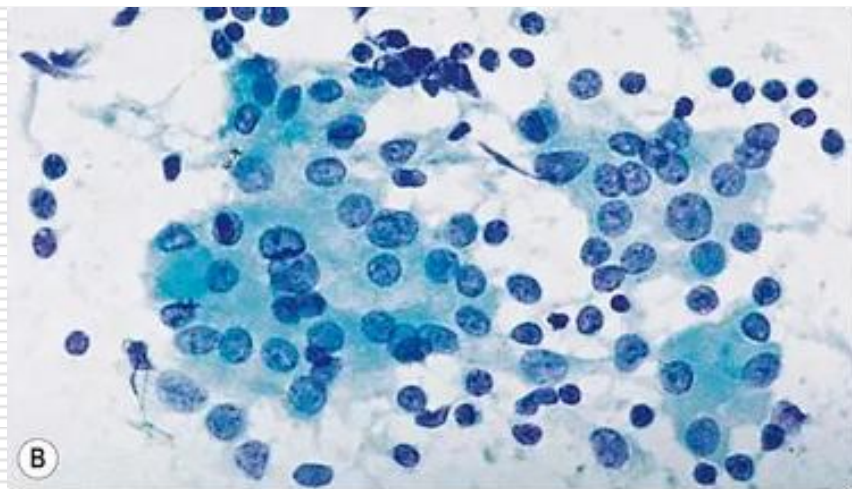
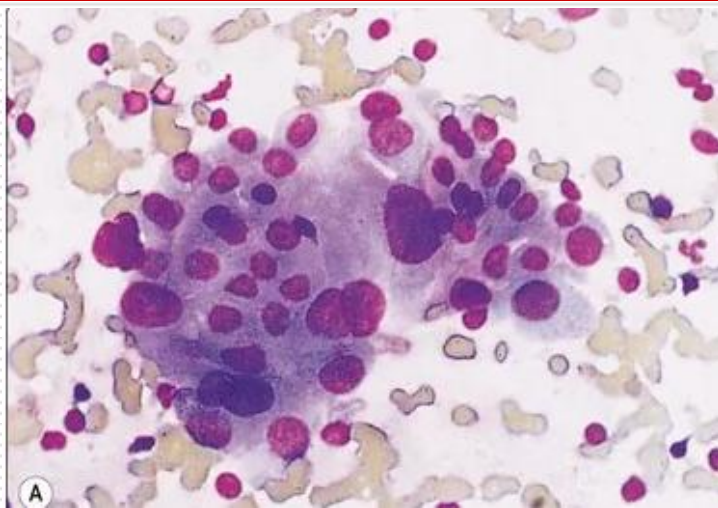
- Mikroacinarni aranžman sa jasno formiranim lumenom



Pap

sitni fragmenti makrofolikula \neq mikrofolikuli

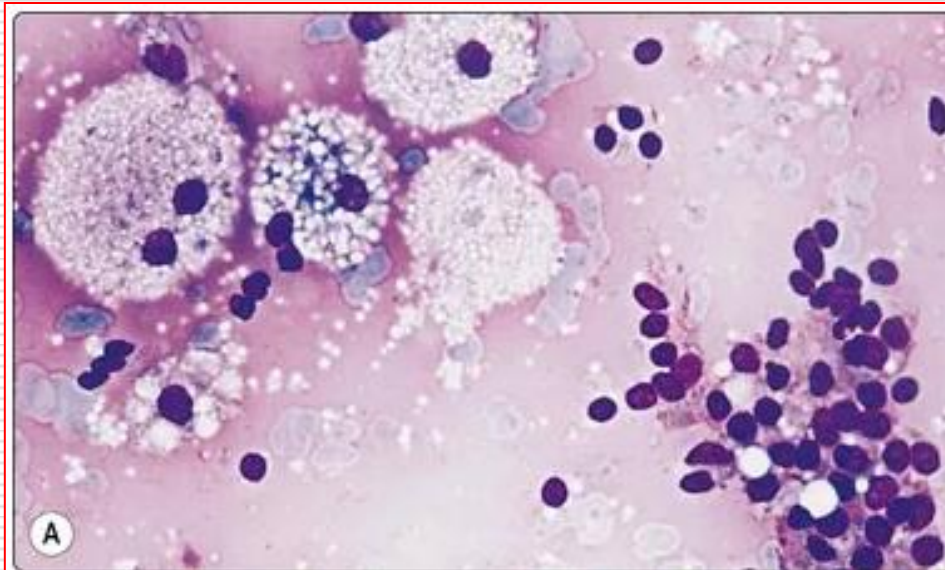
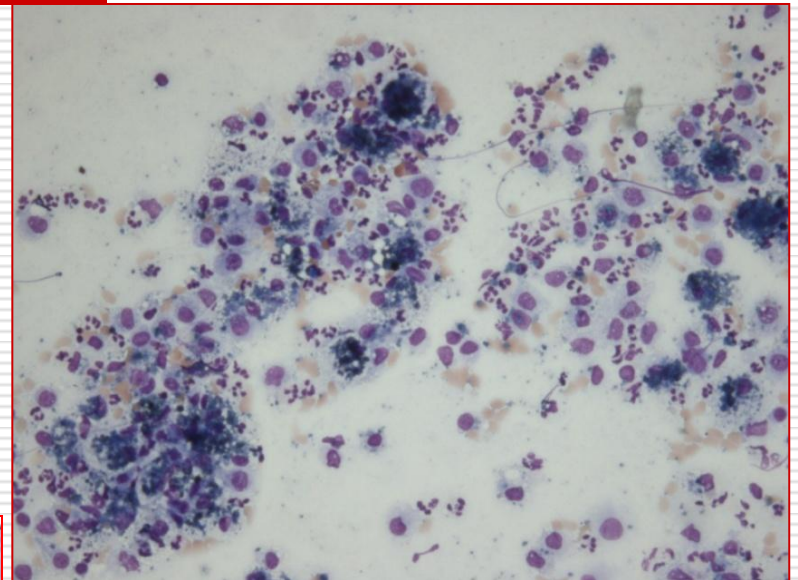
Hürthle ćelije u BFN



- Obilna granulirana citoplazma, krupna jedra, prominentna jedarca
- Moguća upadljiva anizonukleoza, blaga nuklearna atipija, retka jedarna rasvetljenja i urezi
- Aranžman: pojedinačne , plaže

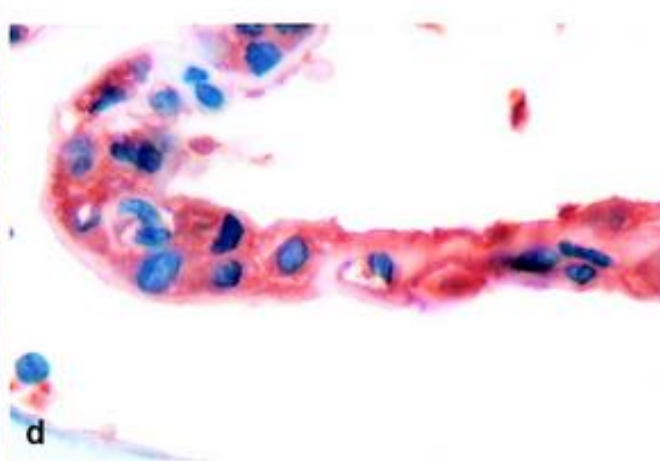
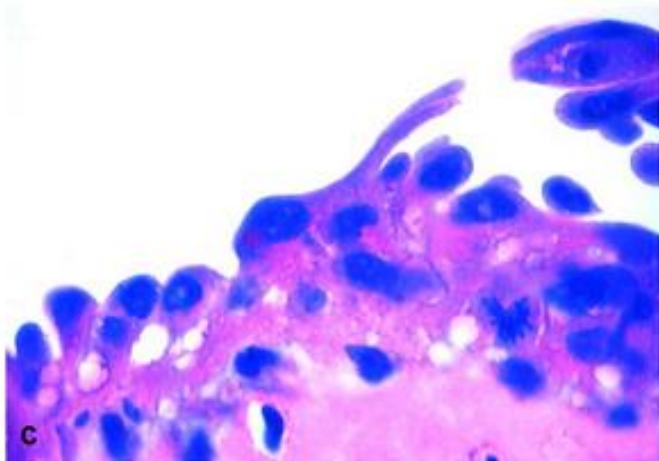
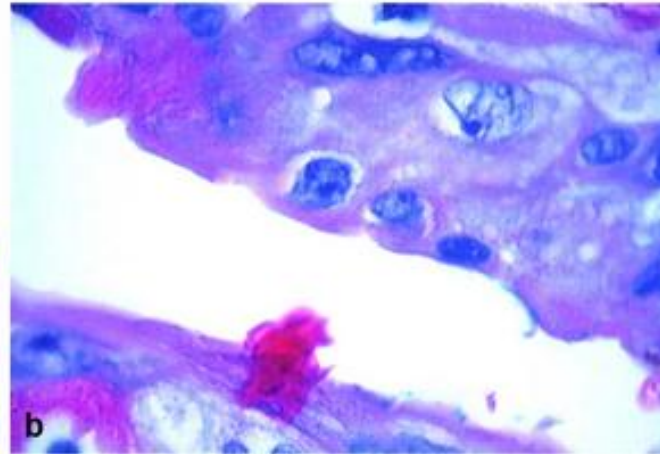
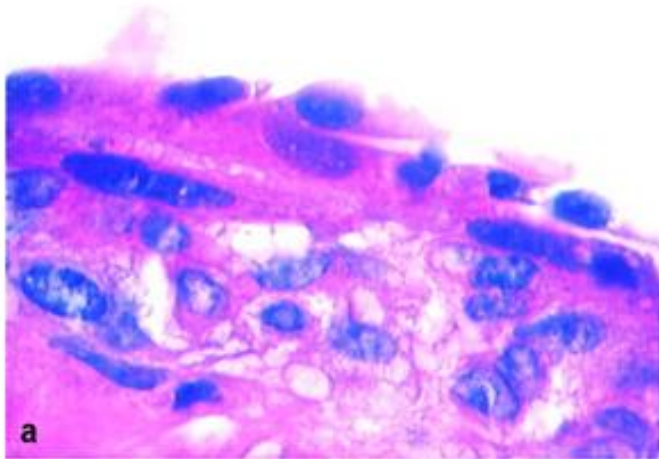
Makrofagi u BFN

- često prisutni sa ili bez pigmenta hemosiderina kao zelenkasto-crne granule



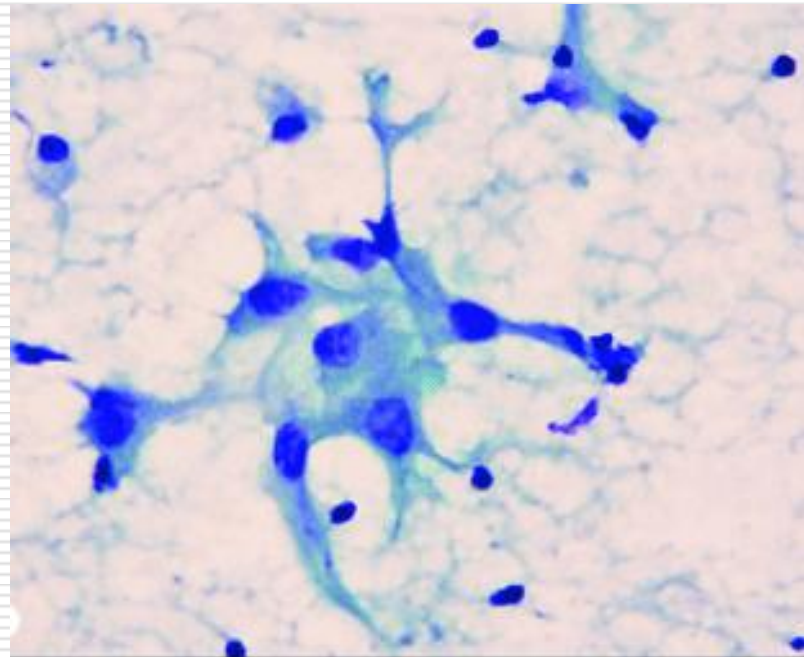
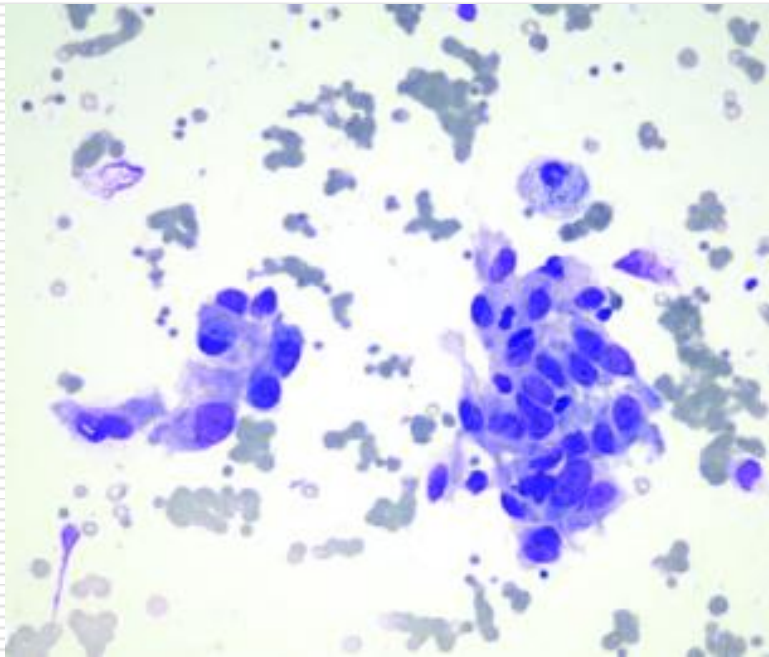
Reparativne promene u BFN

- Naročito u oblažućim ćelijama cističnih lezija



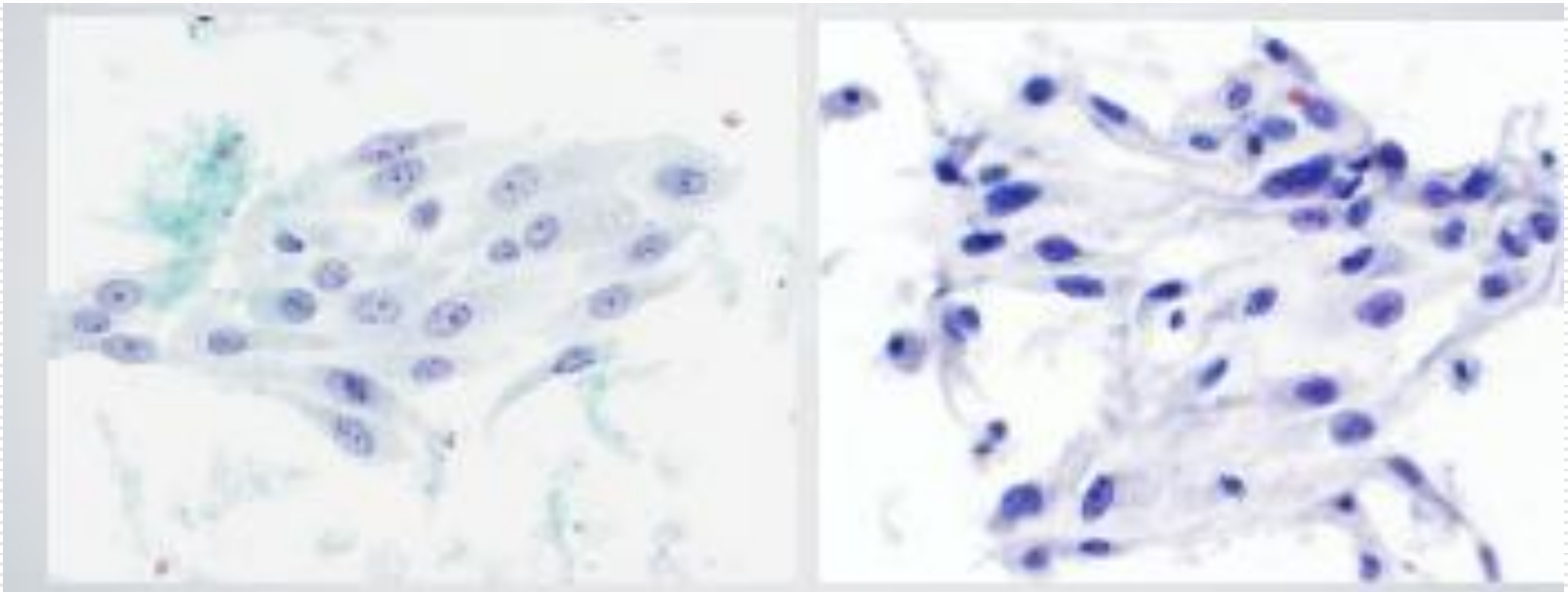
Reparativne promene u BFN

- Čelije su uvećanih jedara, fino granuliranog hromatina



Reparativne promene u BFN

- Čelije skvamoidnog ili vretenastog izgleda

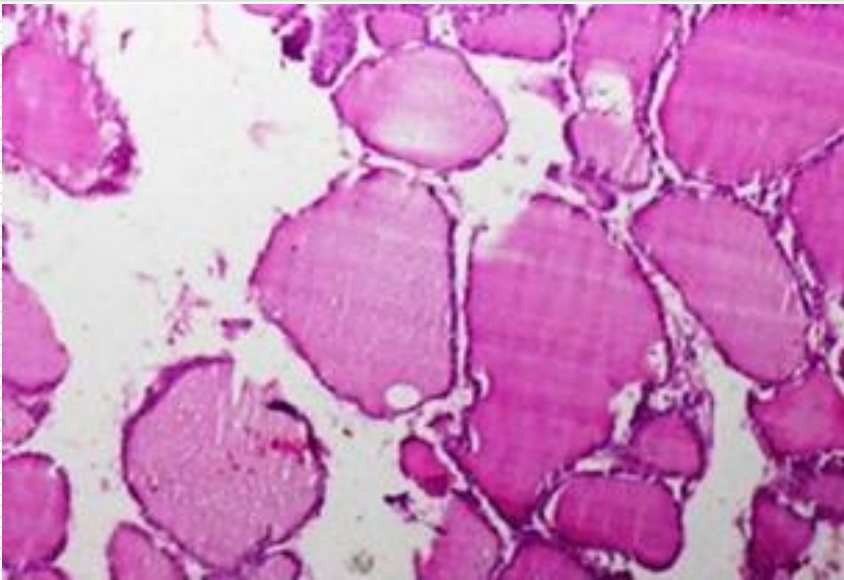


Benigni folikularni nodus

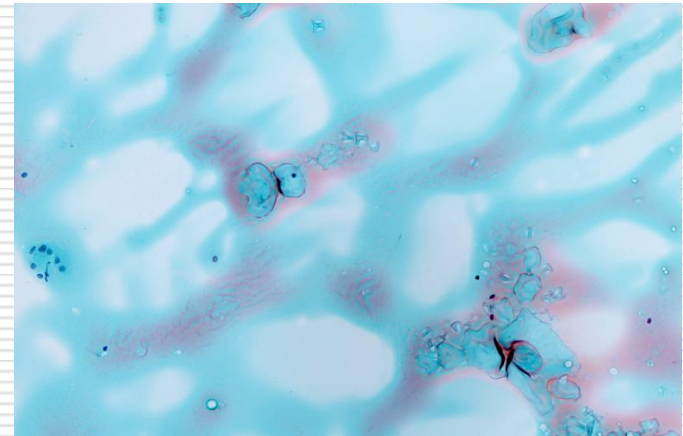
- ❑ Citologija BFN obuhvata morfološki različite grupe benignih histoloških lezija u rasponu od:
 - **koloidnog nodusa** sa minimalnom celularnošću a obilnim koloidnom, do
 - **hiperplastičnog (adenomatoidnog) nodusa** sa obilnom celularnošću i oskudnim koloidom, i
 - **nodusa u Graves-ovoj bolesti**
 - **nodozna struma.**
-

Koloidni nodus

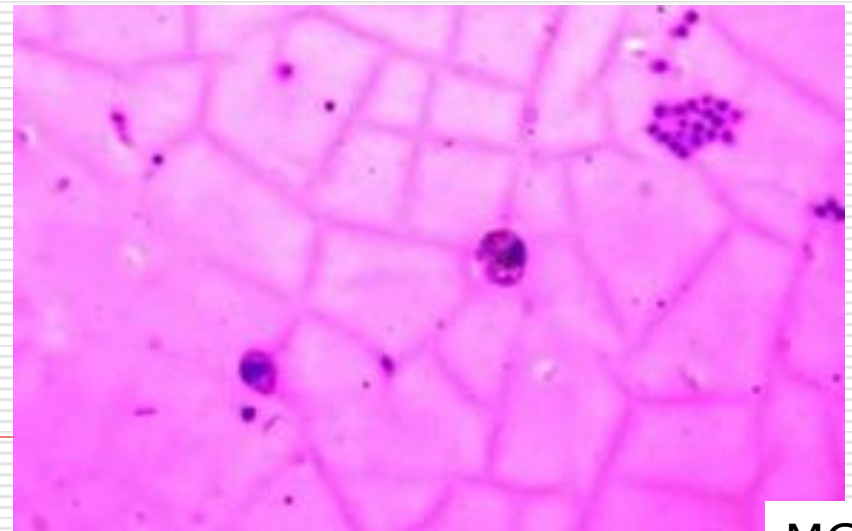
- Uzorak sa obilnim koloidom bez ili sa vrlo retkim folikularnim ćelijama i makrofagima



Vodenasti koloid

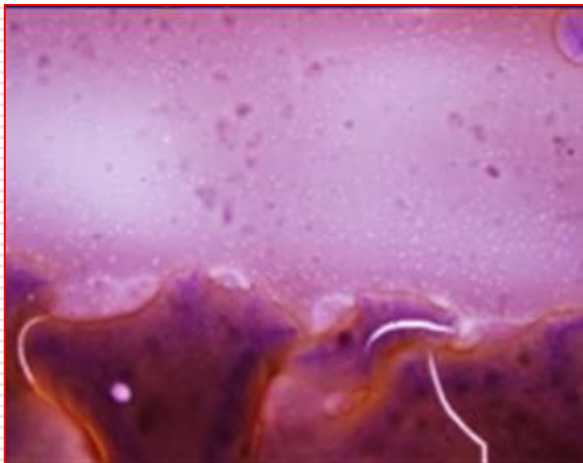


PA

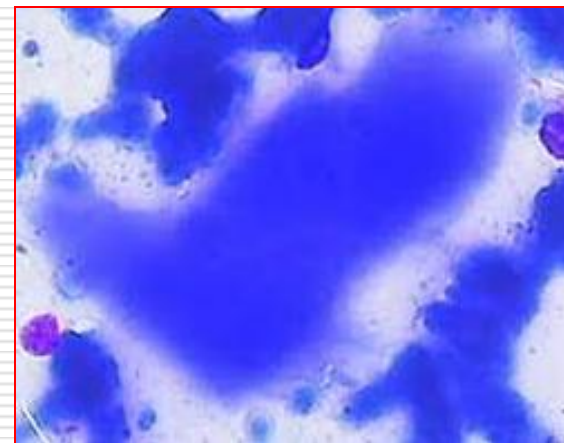


MGG

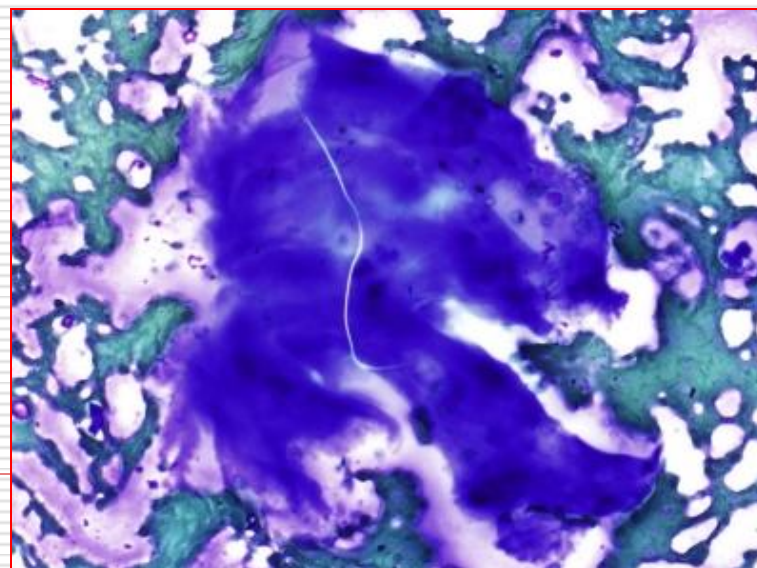
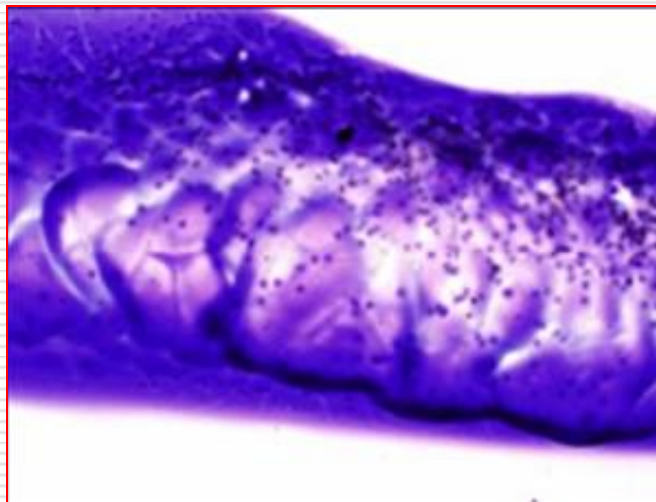
Koloidni nodus



Koloid hijalinog izgleda

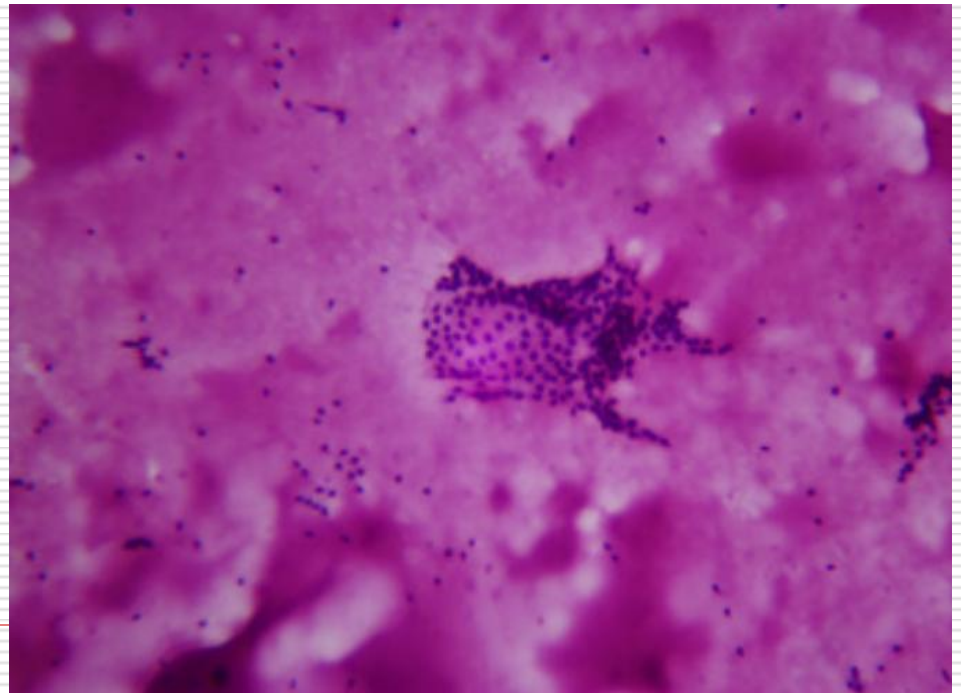
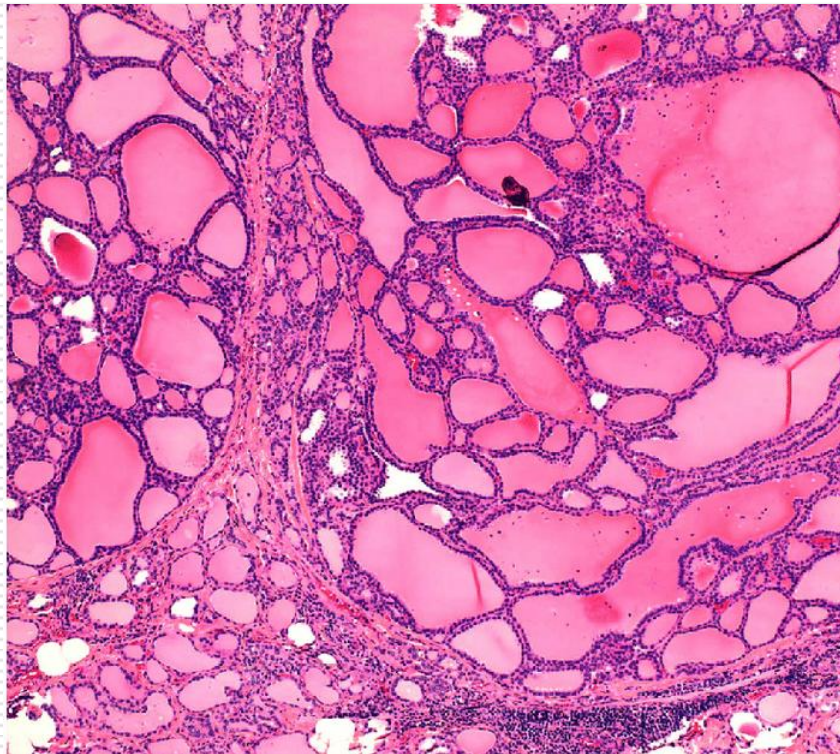


MGG

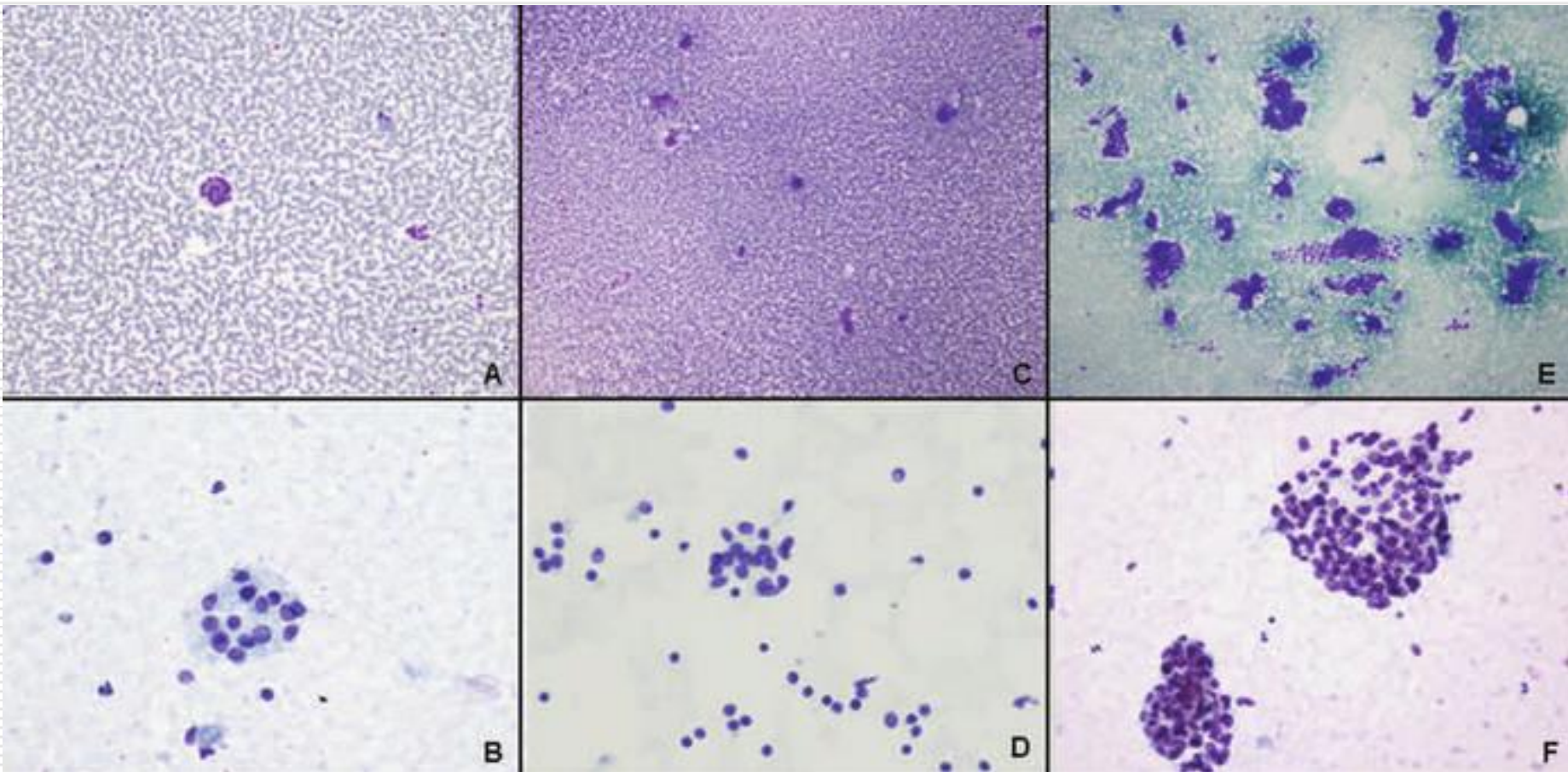


Hiperplastičan/adenomatoidni nodus

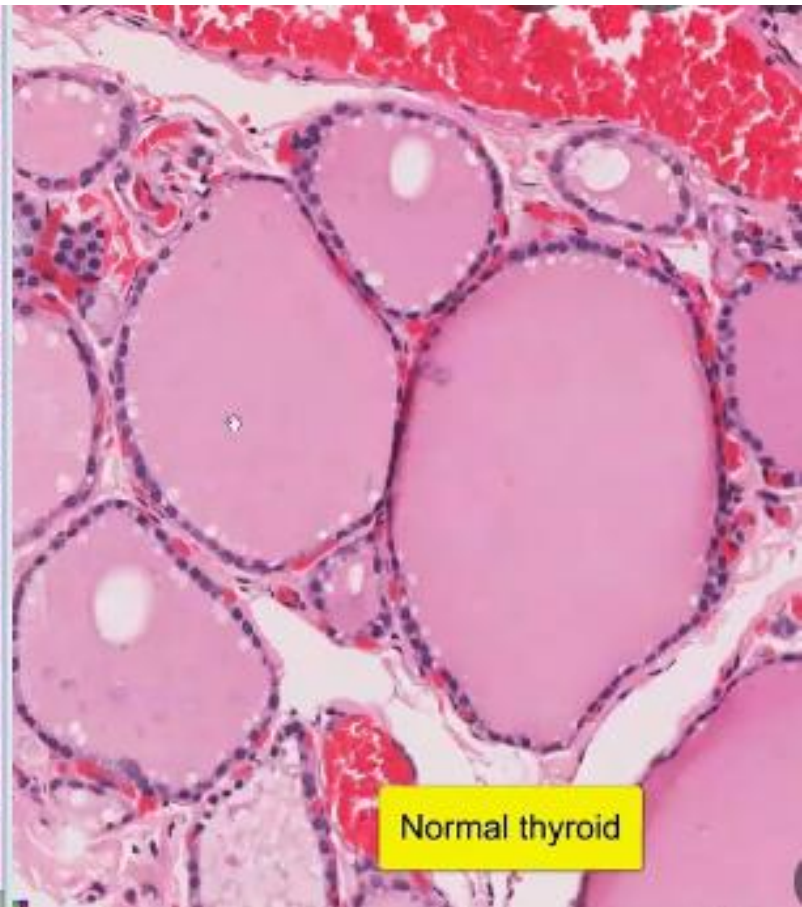
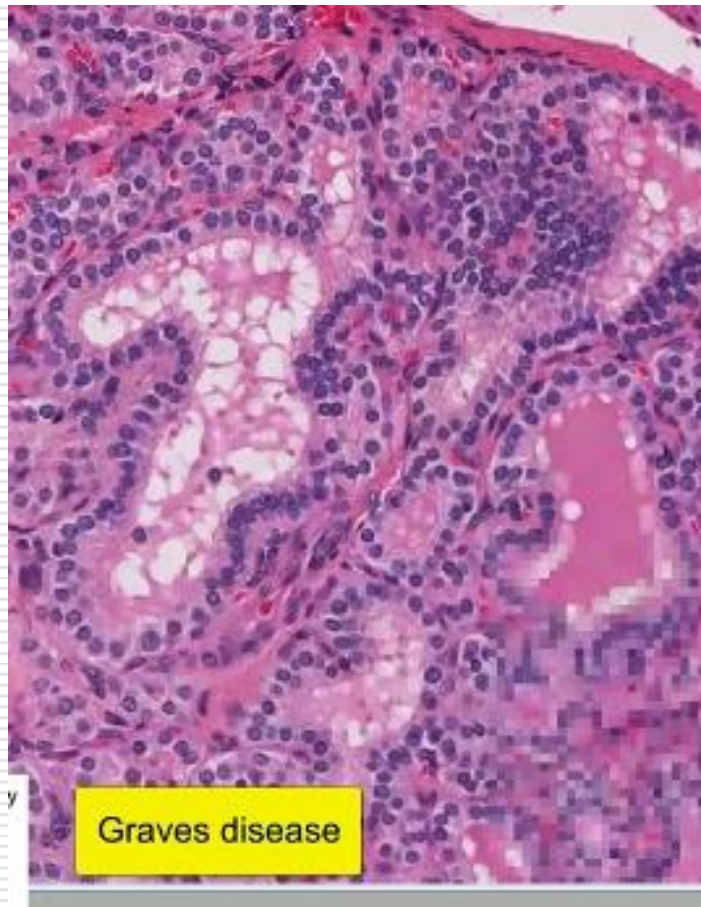
klasteri i pojedinačne razbacane folikularne
ćelije sa koloidom u pozadini



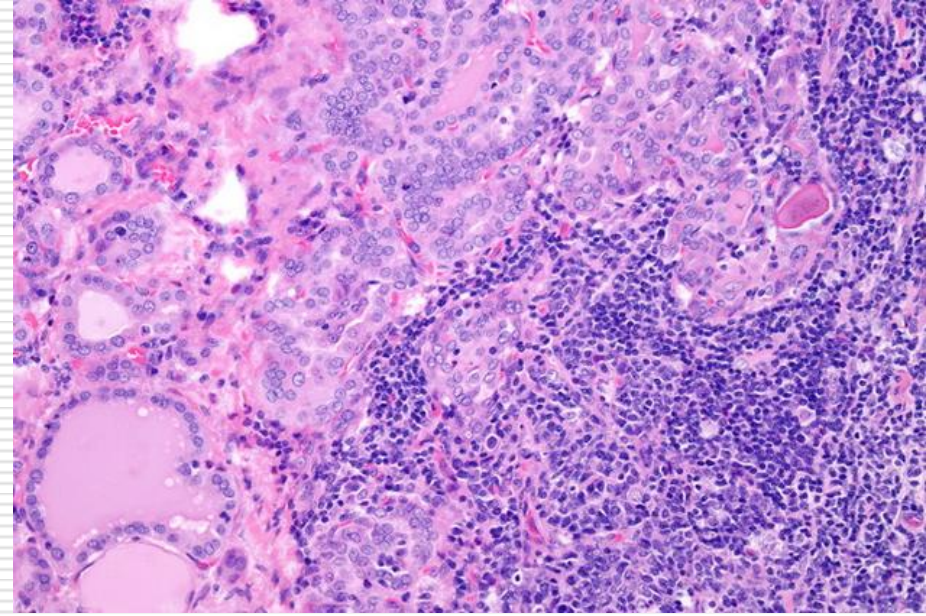
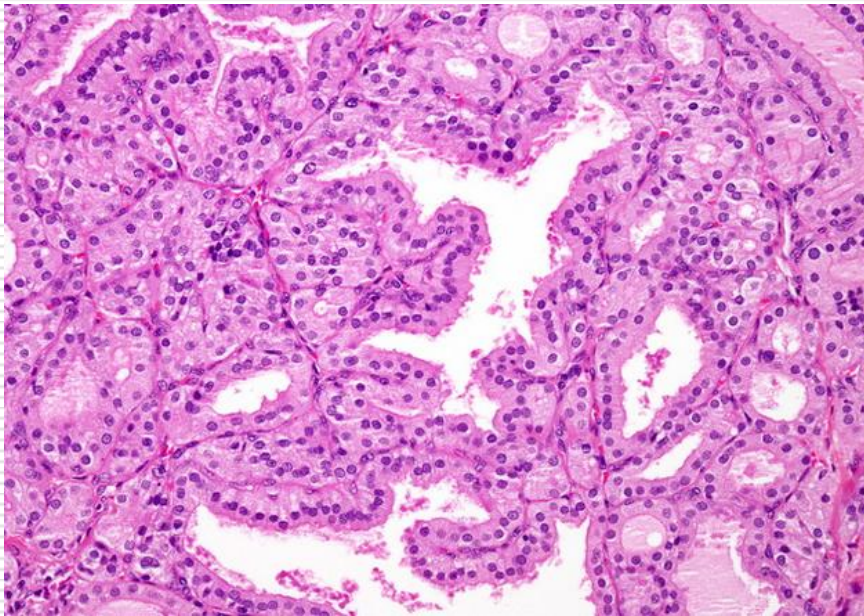
Hiperplastičan/adenomatoidni nodus



Gravesova bolest



Gravesova bolest



Češće difuzno nego nodularno uvećanje štitaste žlezde

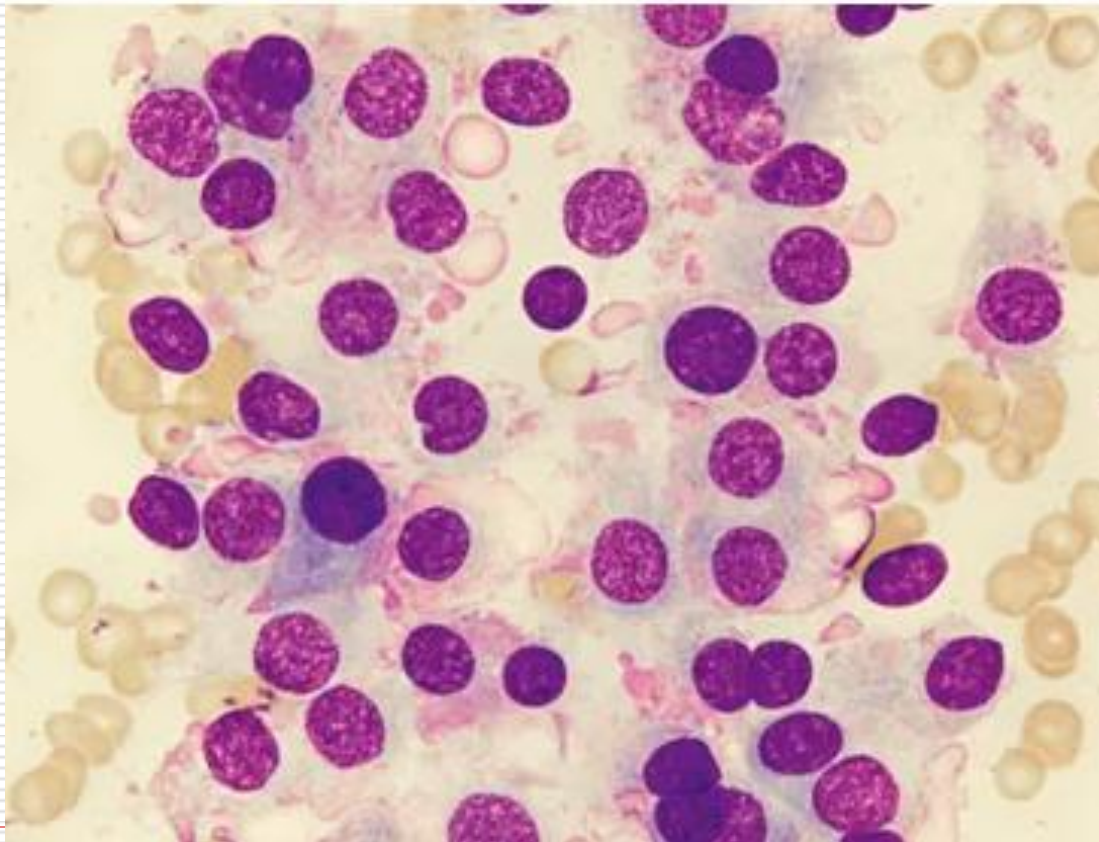
Gravesova bolest

- ❑ Citološka slika nespecifična
- ❑ Aspirat je često celularan i pokazuje sliku ne- Graves BFNa, uključujući obilan koloid i različit broj folikularnih ćelija
- ❑ Neophodna citološko-klinička korelacija



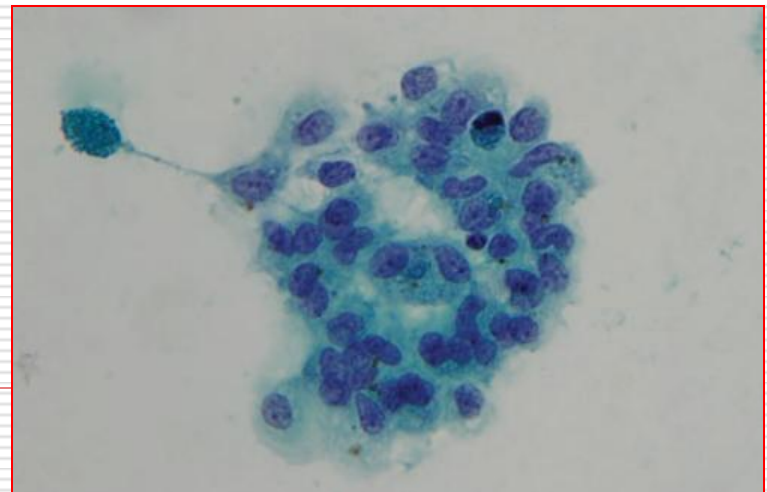
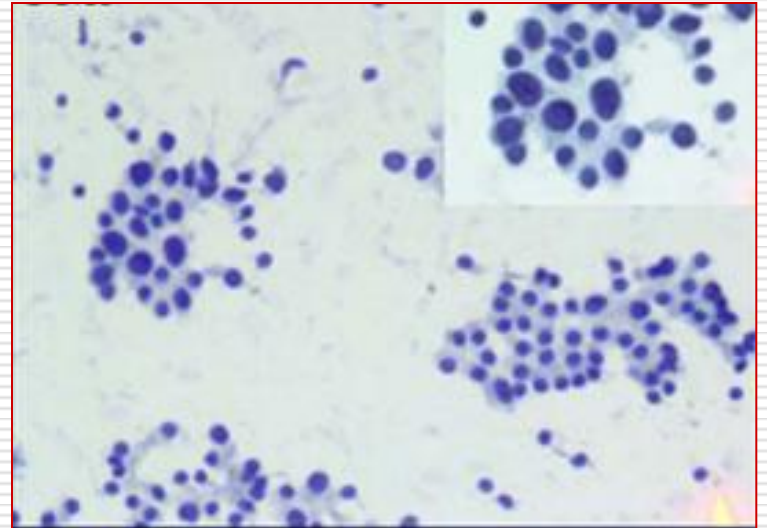
Gravesova bolest

- Diskohezivne folikularne ćelije, obilnije citoplazme



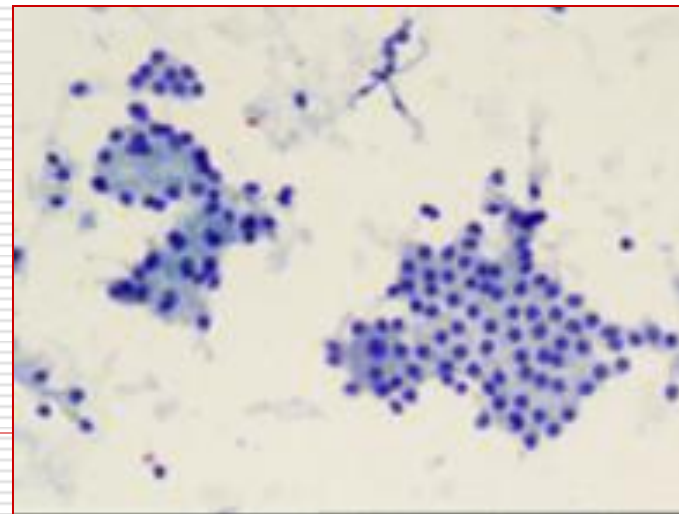
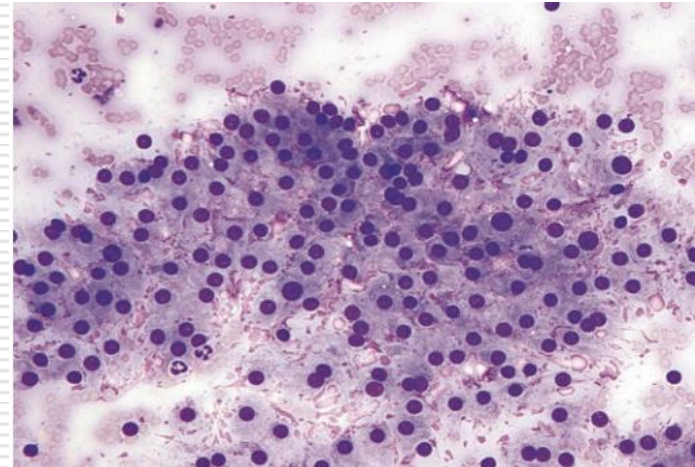
Gravesova bolest

- ☐ Jedra su često uvećana, vezikularna sa prominentnim nukleolusima
- ☐ Ponekad prisutna fokalna jedarna rasvetljenja i useci



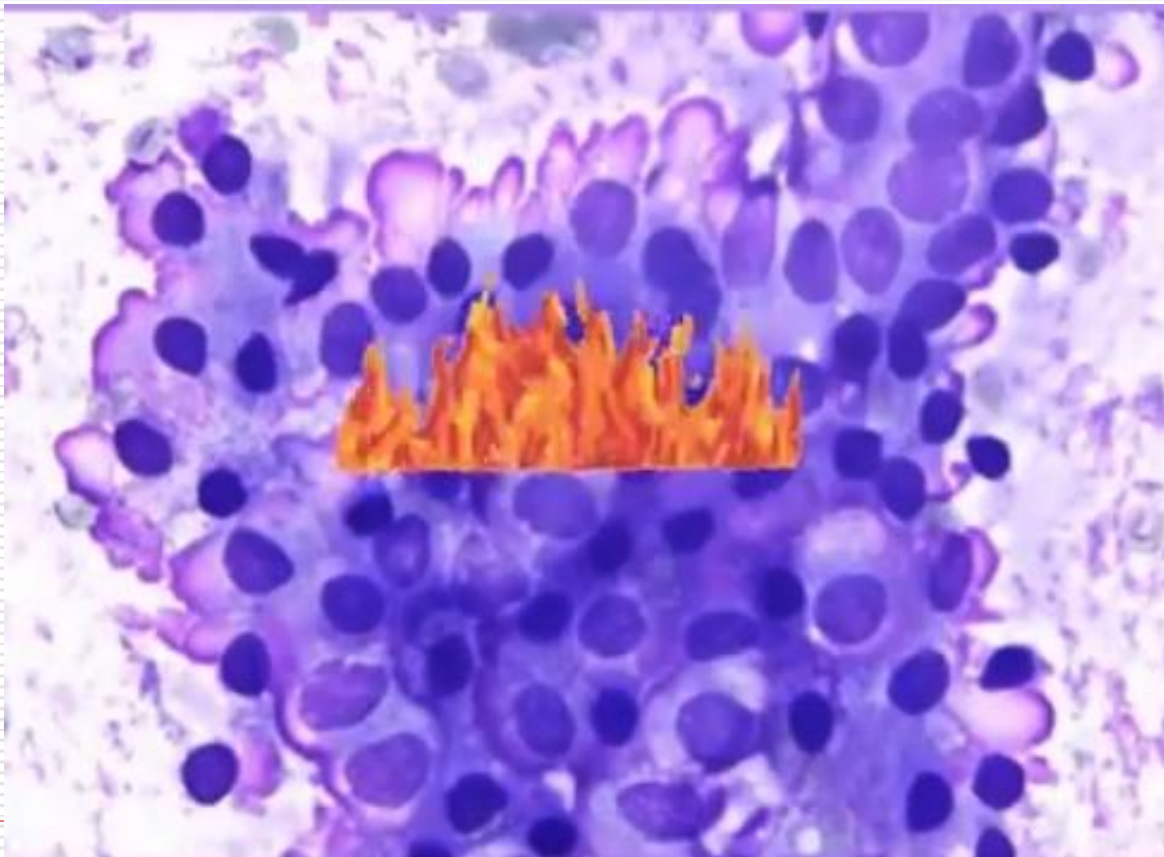
Gravesova bolest

- ❑ Čelije aranžirane u velike jednoslojne do slabo kohezivne grupe sa obilnom penušavom citoplazmom
- ❑ Ponekad prisutno nekoliko mikrofolikula



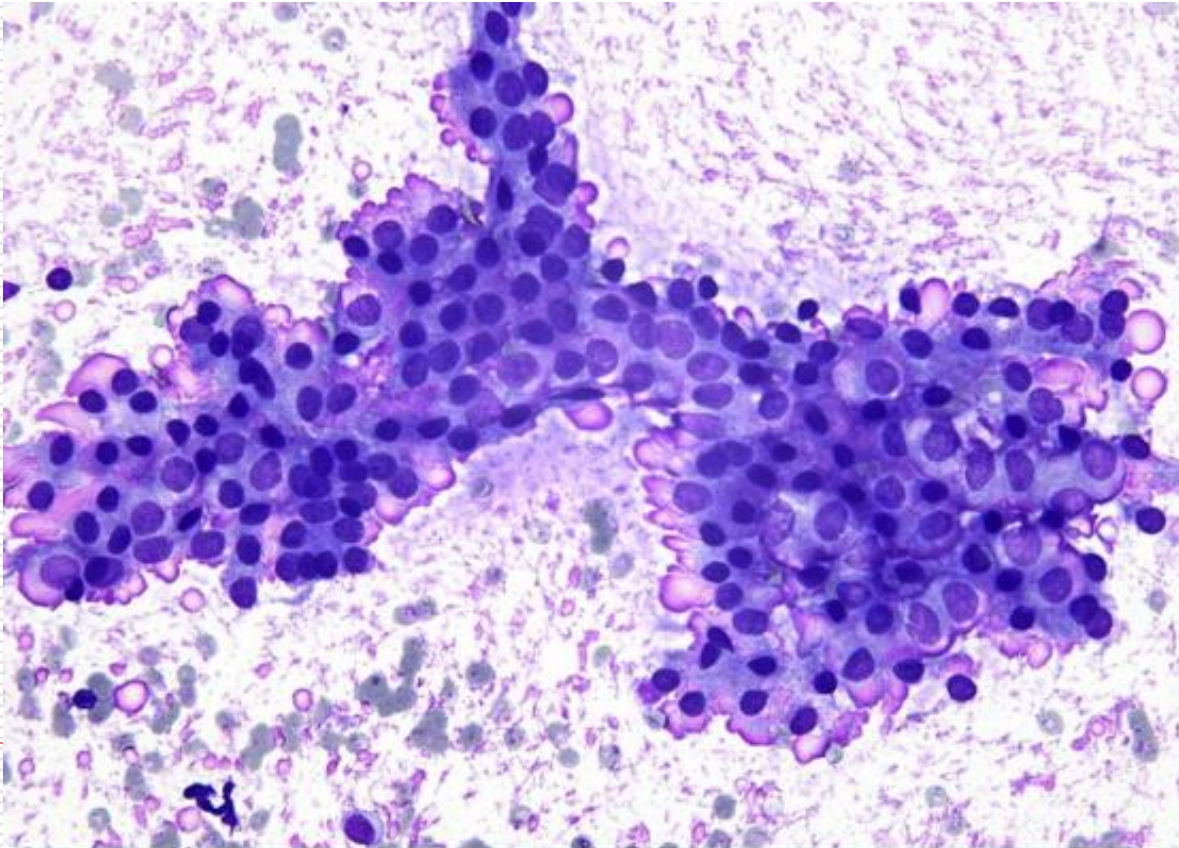
Gravesova bolest

- “Plamene” ćelije (*flame cells; fire-flare cells*)

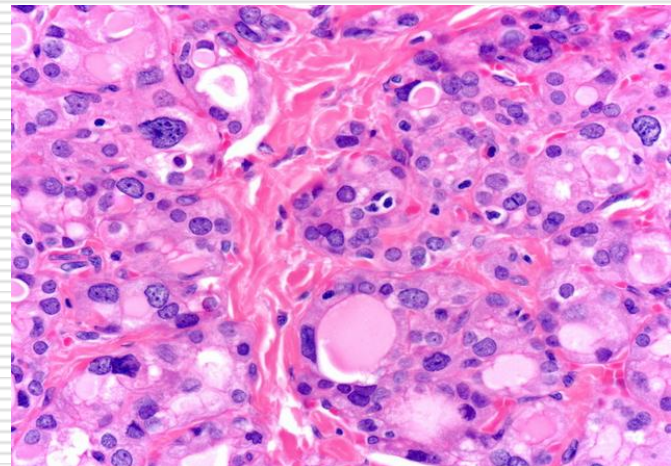
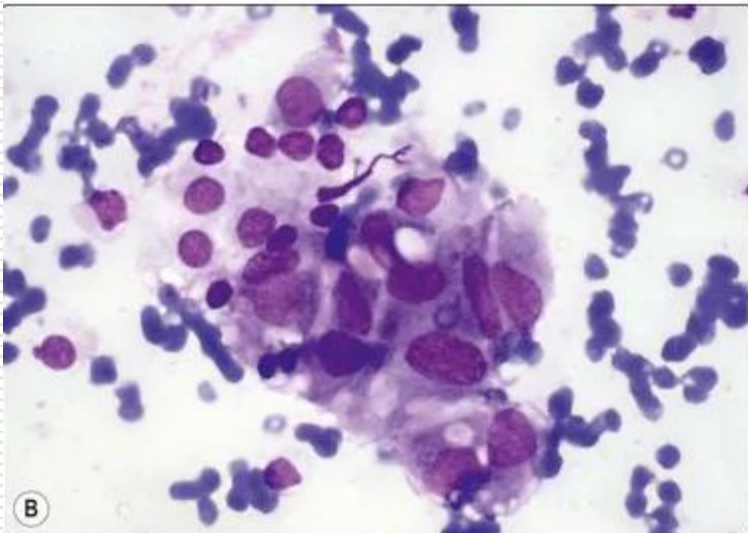
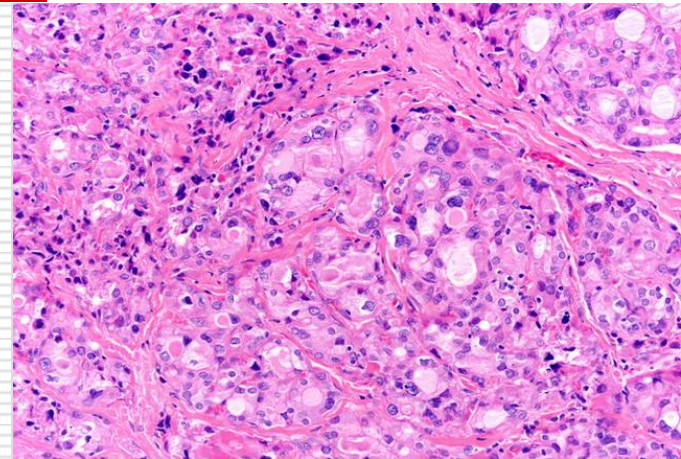
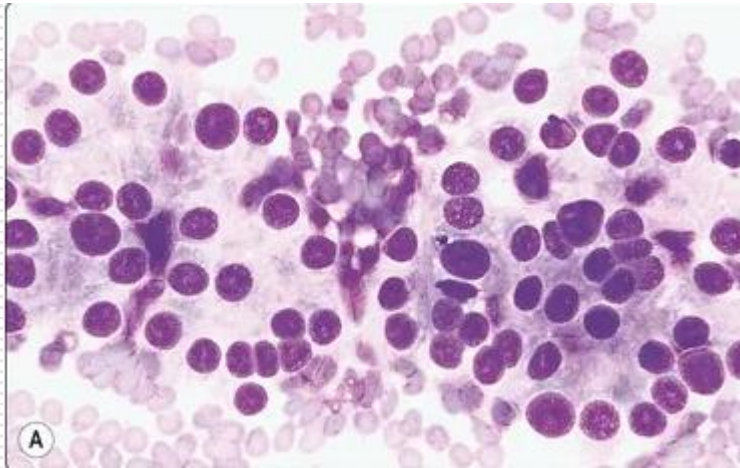


Gravesova bolest

- “Plamene” ćelije se prezentuju sa marginalnim citoplazmatskim vakuolama sa crvenim do ružičastim iskrzanim krajevima



Lečena Gravesova bolest

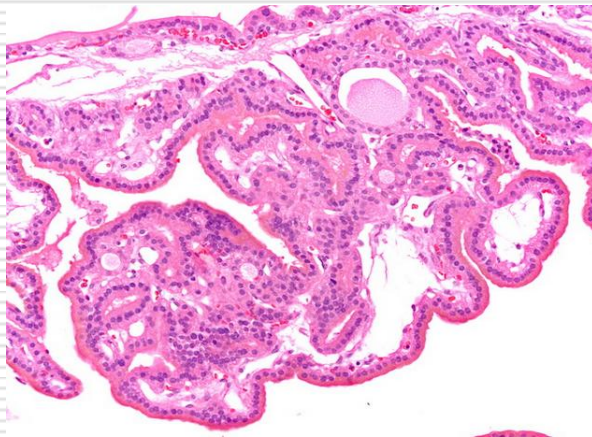
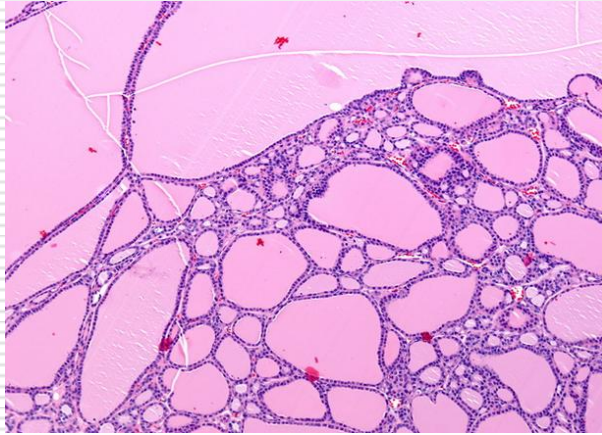


-anizonukleoza/anizocitoza
-jedarno preklapanje i nagomilavanje

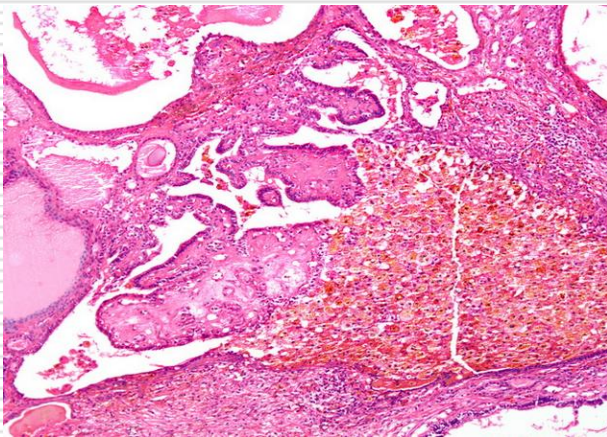
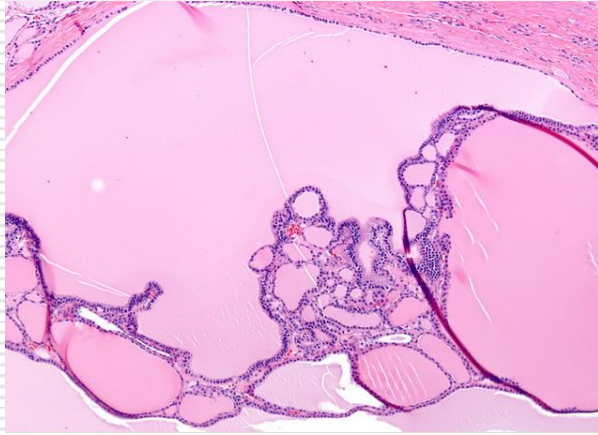
Nodozna struma



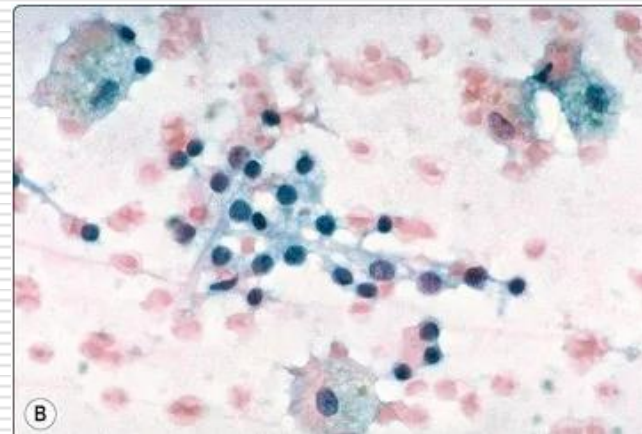
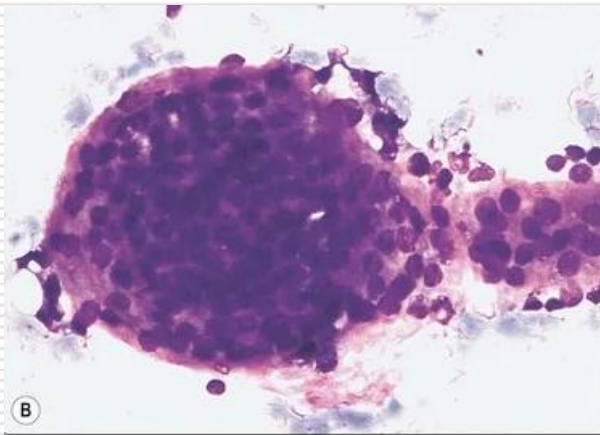
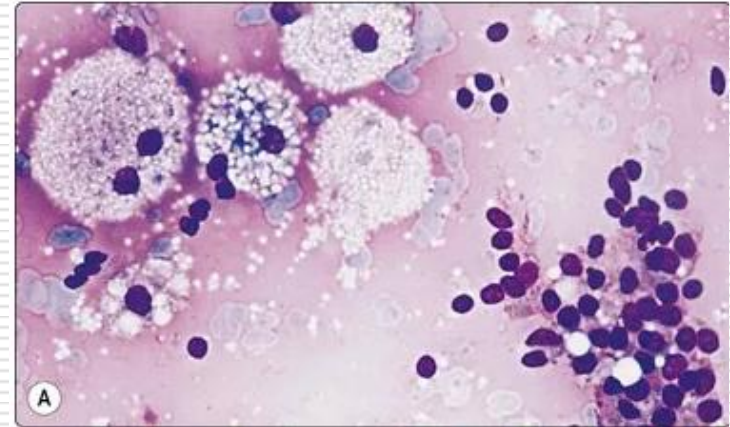
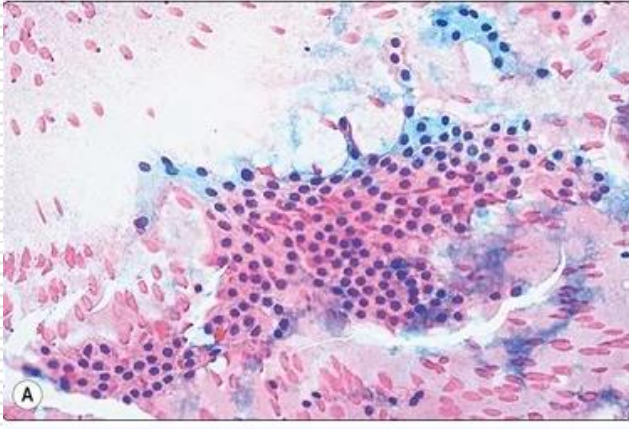
Nodozna struma



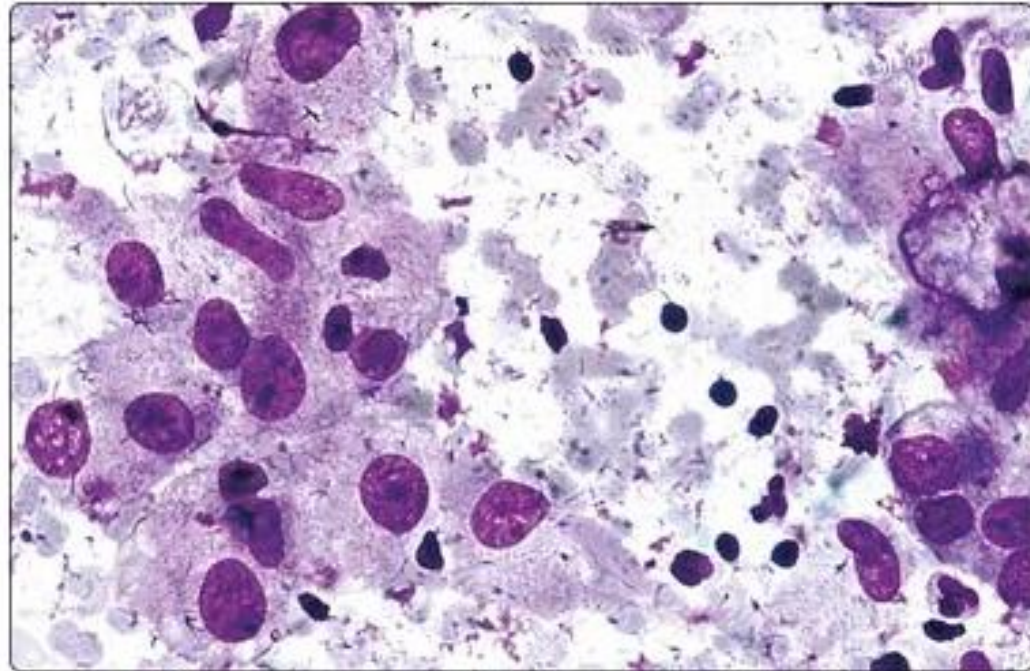
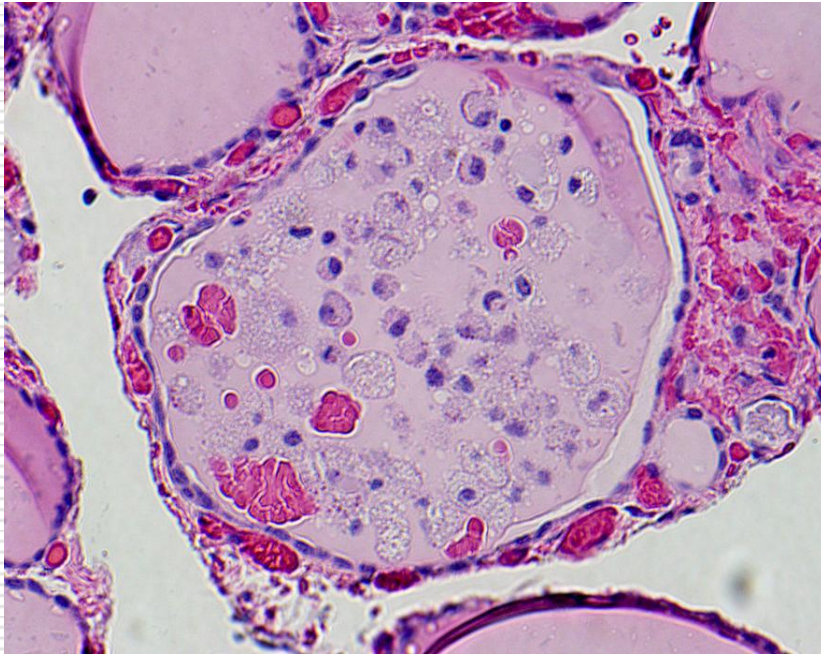
Nodozna struma



Nodozna struma



Cistične degenerativne promene



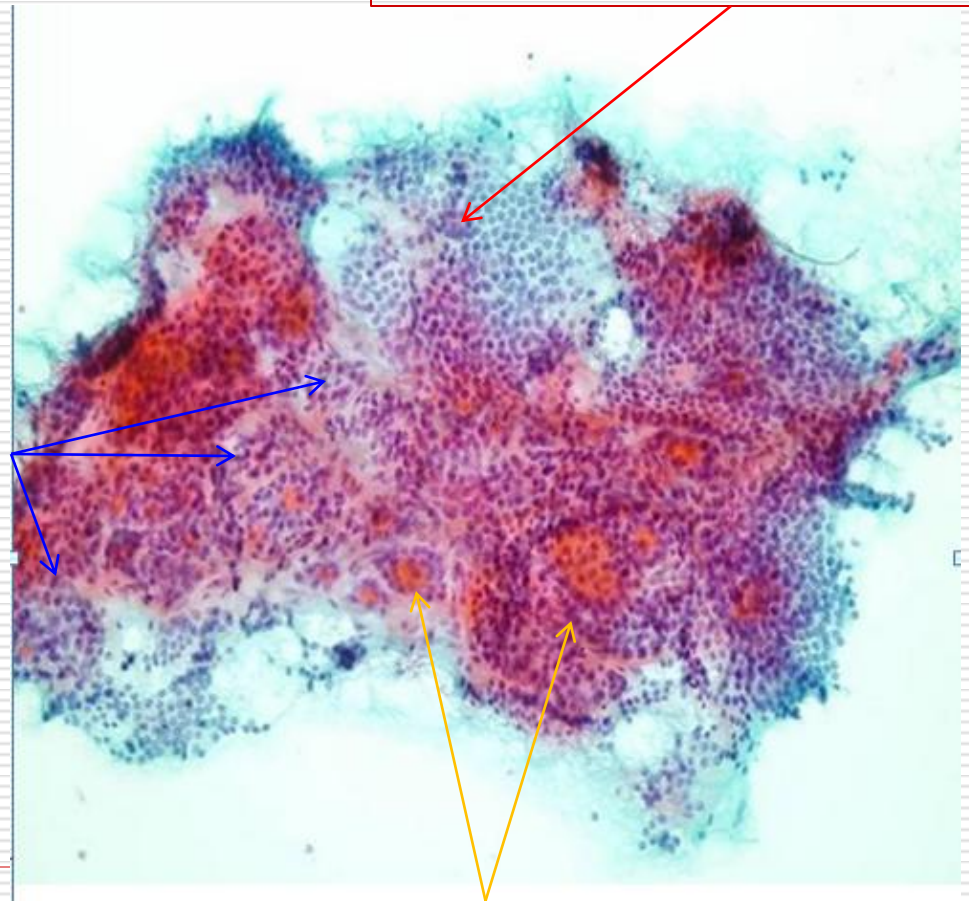
Histiociti obilnije citoplazme, uvećanih iregularnih jedara sa jedarcima.
U pozadini: atipična epitelna ogoljena jedra degenerisanih tireocita

Nodozna struma

Mikrobiopsija

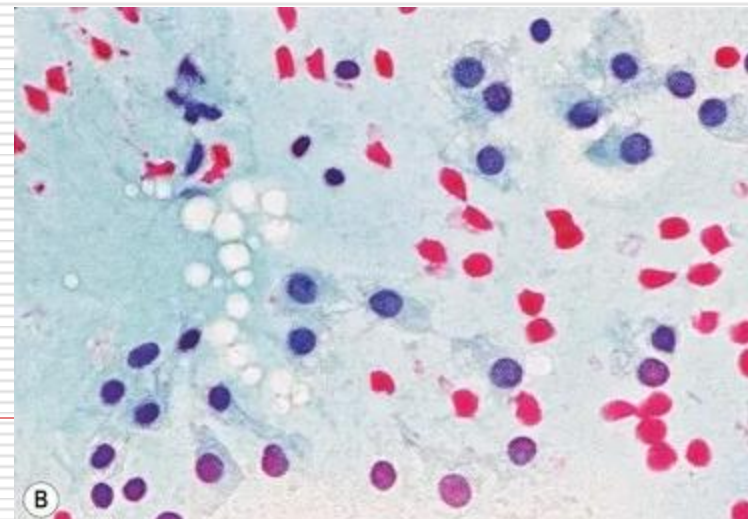
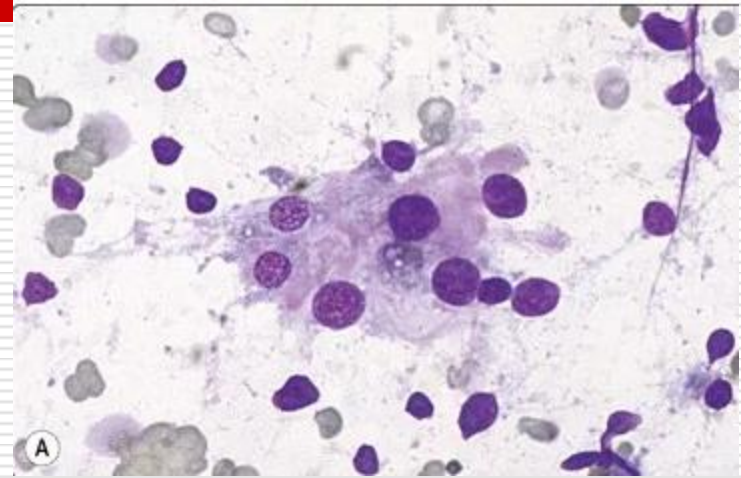
Okrugli 3D aranžmani
odvojeni kolegenom stromom

Monoslojni aranžman



Oranžofilni koloid

Nodozna struma



Diagnostic criteria

- ♦ Abundant thick or thin colloid,
- ♦ Follicular cells in monolayered sheets, poorly cohesive clusters and single cells,
- ♦ Hyperplastic, involutinal and oxyphilic follicular cells,
- ♦ Fragile cytoplasm, many bare nuclei,
- ♦ Pigment laden histiocytes (foam cells),
- ♦ Degenerative features like old blood and cell debris.

Benigni folikularni nodus

□ FNA ne može da razlikuje

- nodoznu strumu od

- makrofolikularnog adenoma bogatog koloidom, tako da se on često citološki dijagnostikuje kao BFN.

Limfocitni tireoiditis

Limfocitni tireoiditis

- Citološki uzorak polimorfnih limfoidnih ćelija, benignih folikularnih ćelija i/ili Hürthle ćelija (onkocita)
 - Hronični limfocitni (Hashimoto) tireoiditis
 - Subakutni limfocitni tireoiditis (postpartalni i *silent*)
 - Fokalni limfocitni (*silent*) tireoiditis
-

Hronični limfocitni (Hashimoto) tireoiditis



FNA- kod nodularnosti i povećanja volumena

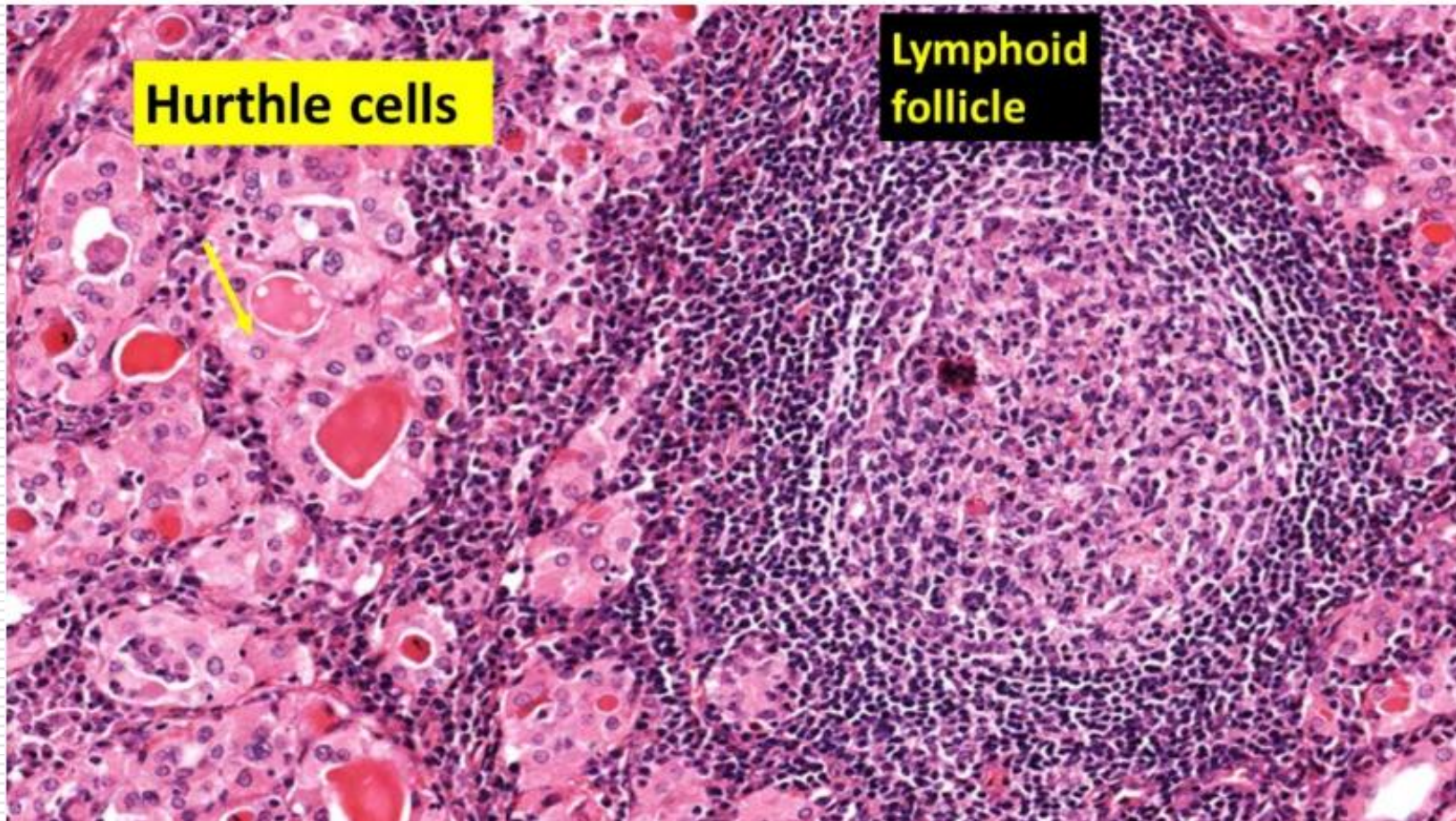
Hronični limfocitni (Hashimoto) tireoiditis

Infiltration of parenchyma by mononuclear inflammatory cell infiltrate

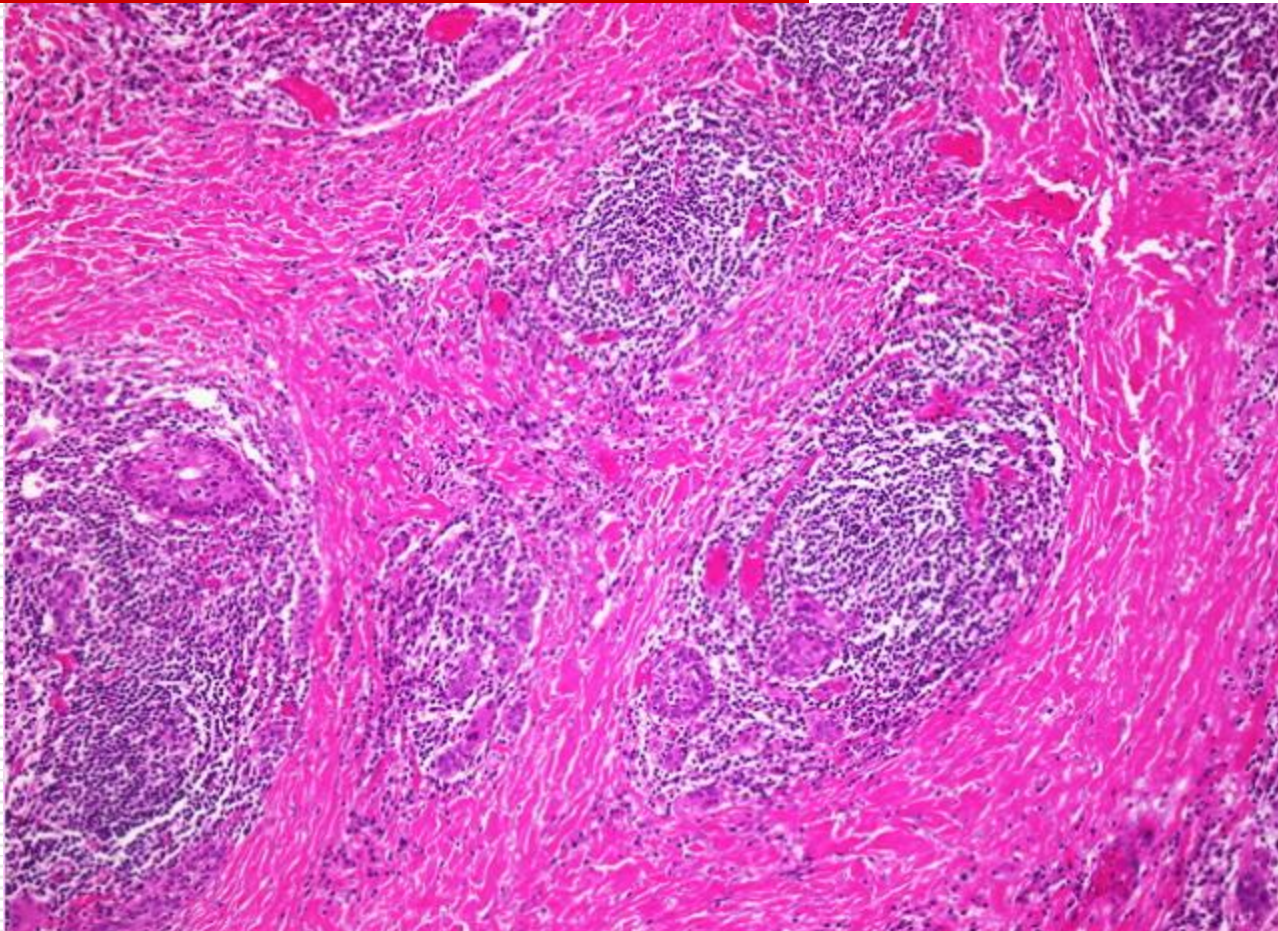


Atrophy of the follicles

Hronični limfocitni (Hashimoto) tireoiditis

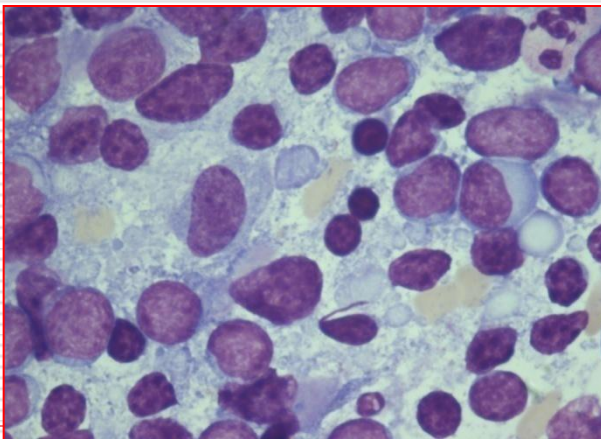
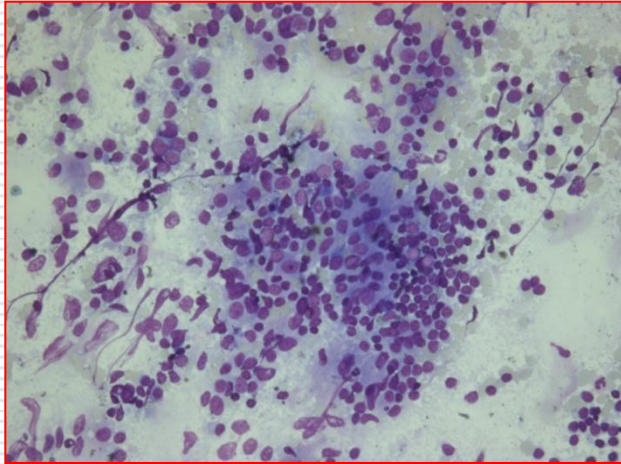


Hronični limfocitni (Hashimoto) tireoiditis



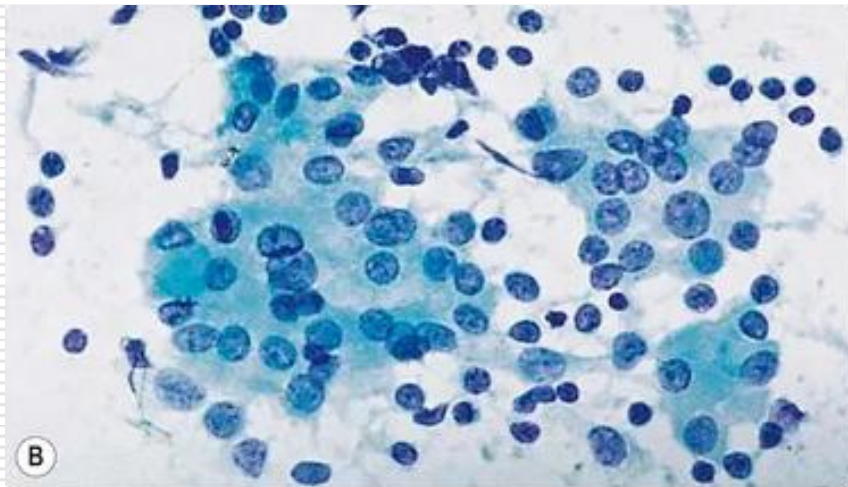
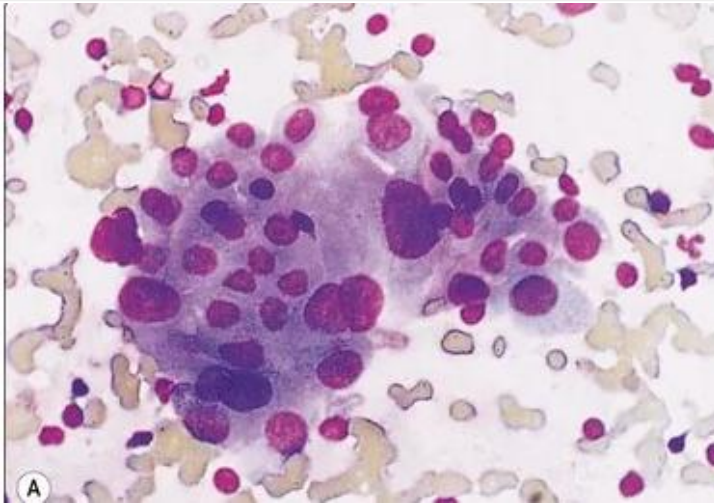
Fibrozna varijanta

Hronični limfocitni (Hashimoto) tireoiditis



- ☐ Hipercelularni uzorci
- ☐ Odmakla fibrozna faza ili veća količina krvi smanjuju celularnost
- ☐ Za interpretaciju ne postoji minimalan broj:
- ☐ Hürthle ćelije
- ☐ Folikularne ćelije
- ☐ Limfoidna populacija

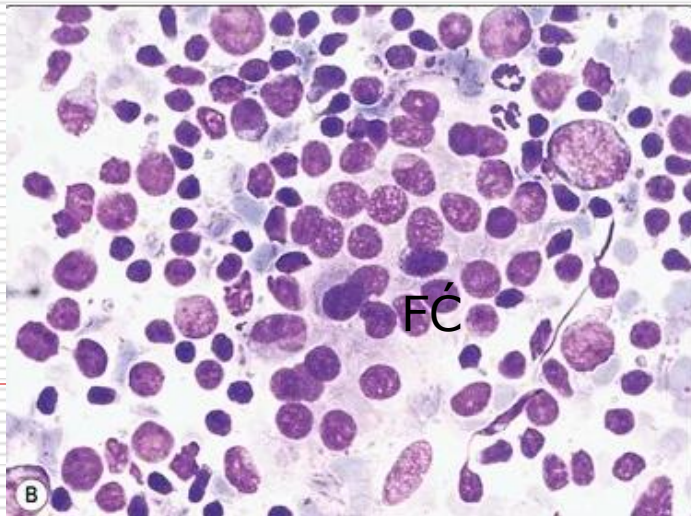
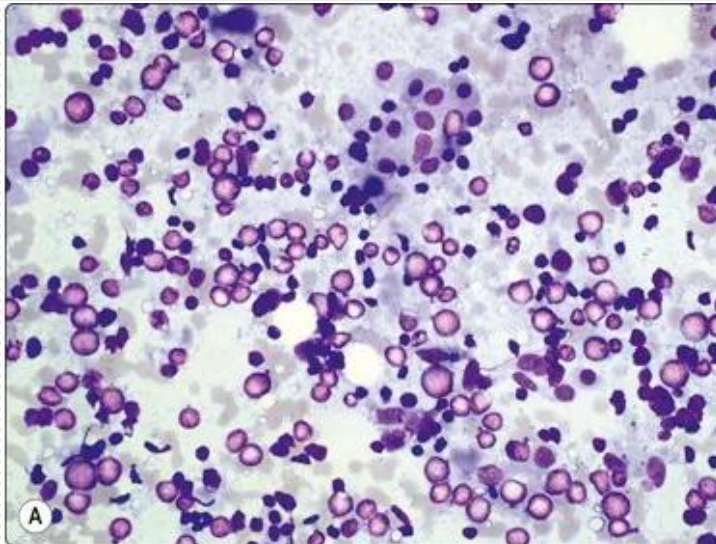
Limfocitni (Hashimoto) tireoiditis



☐ Hürthle ćelije

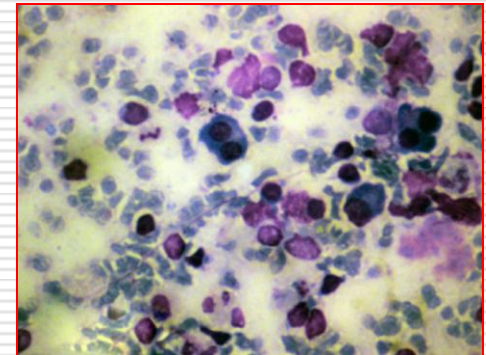
- ☐ Obilna granulirana citoplazma, krupna jedra, prominentna jedarca
- ☐ Moguća upadljiva anizonukleoza, blaga nuklearna atipija, retka jedarna rasvetljenja i urezi
- ☐ Aranžman: pojedinačne, plaže

Hronični limfocitni (Hashimoto) tireoiditis



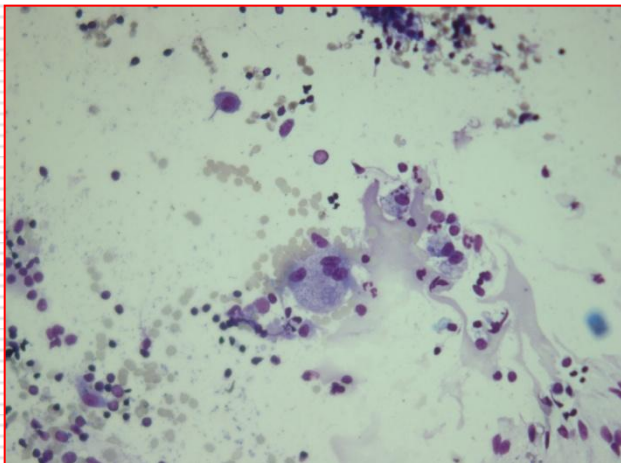
- **Limfoidna populacija**

- Pleomorfna:
limfociti, krupnije reaktivne
limfoidne ćelije, plazma
ćelija

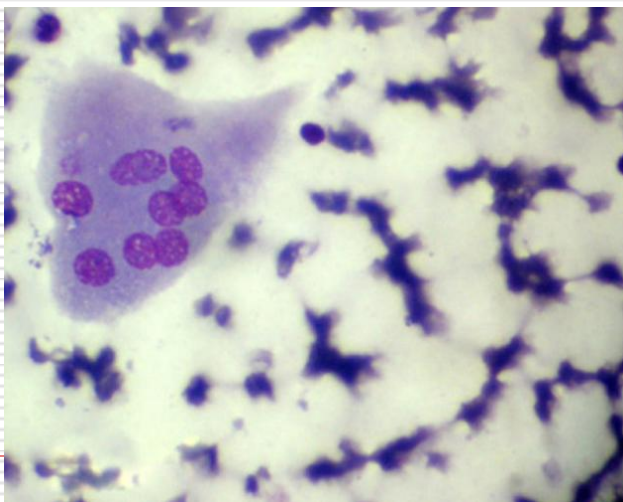


- Limfociti kao „background“,
između folikularnih ćelija,
retko u vidu limfoidnih
folikula

Hronični limfocitni (Hashimoto) tireoiditis

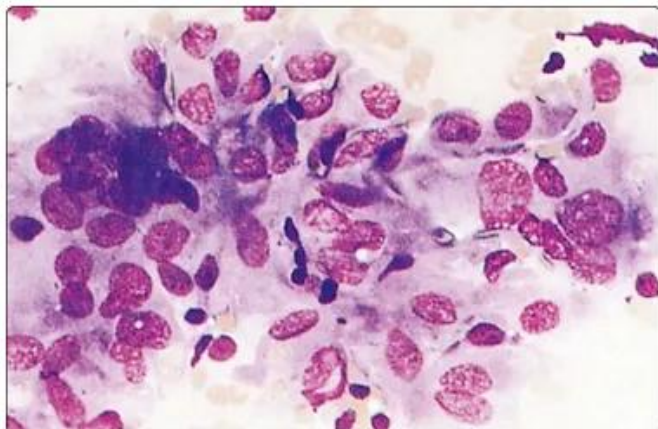


- Oskudan koloid u obliku žvakaće gume

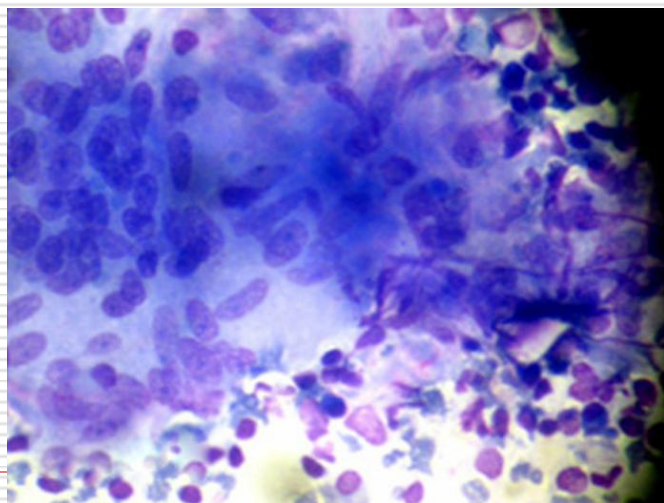


- Džinovski višejedarni histiocit

Hronični limfocitni (Hashimoto) tireoiditis



- Epiteloidni histiociti u formi granuloma-like

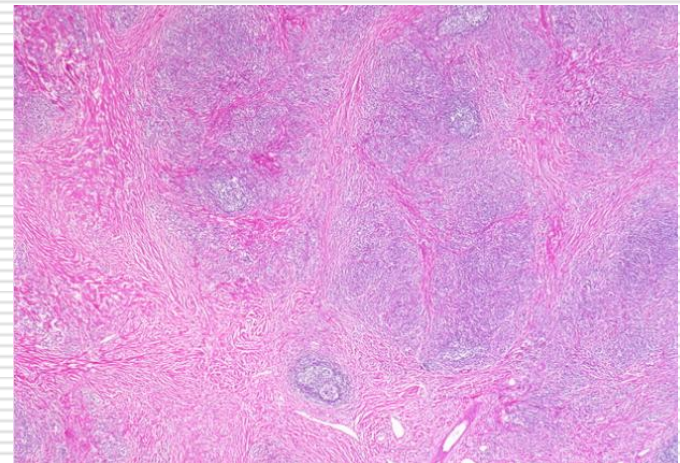
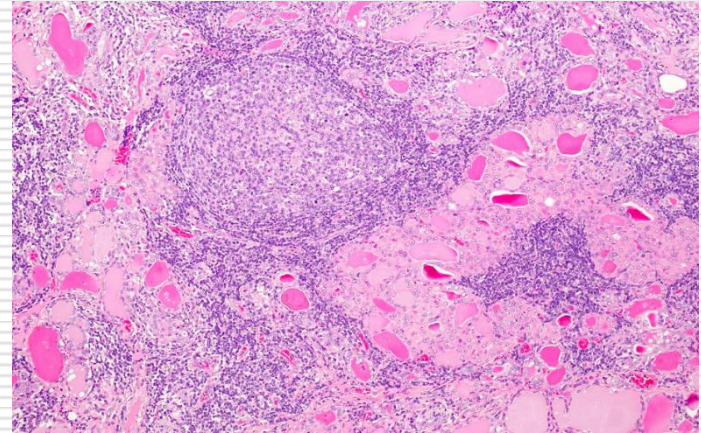


- Granulom

Hronični limfocitni (Hashimoto) tireoiditis

Diagnostic criteria

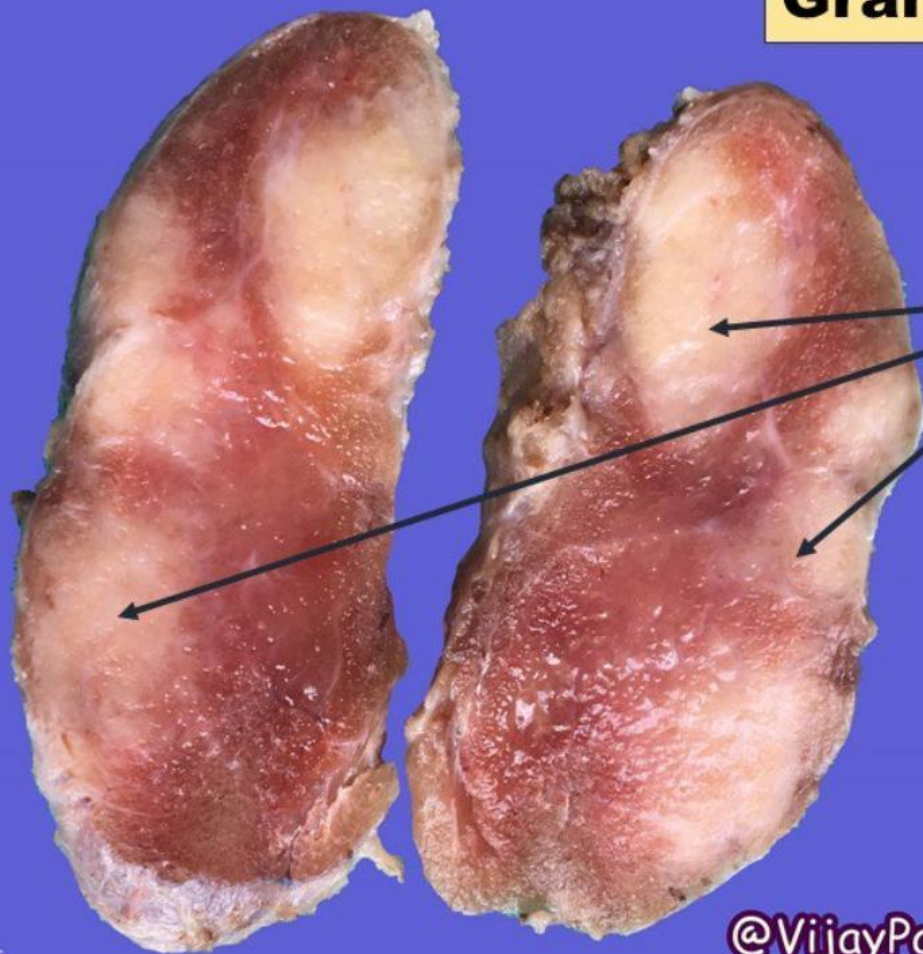
- ♦ Lymphoid and plasma cells in the background,
- ♦ Lymphoid cells impinging on follicular cells,
- ♦ Lympho-histiocytic collections,
- ♦ Hurthle cell change (variable),
- ♦ Multinucleate giant cells and epithelioid cells (variable).



Granulomatozni (subakutni, de Quervain) tireoiditis

SUBACUTE THYROIDITIS

De Quervain thyroiditis/ Granulomatous thyroiditis



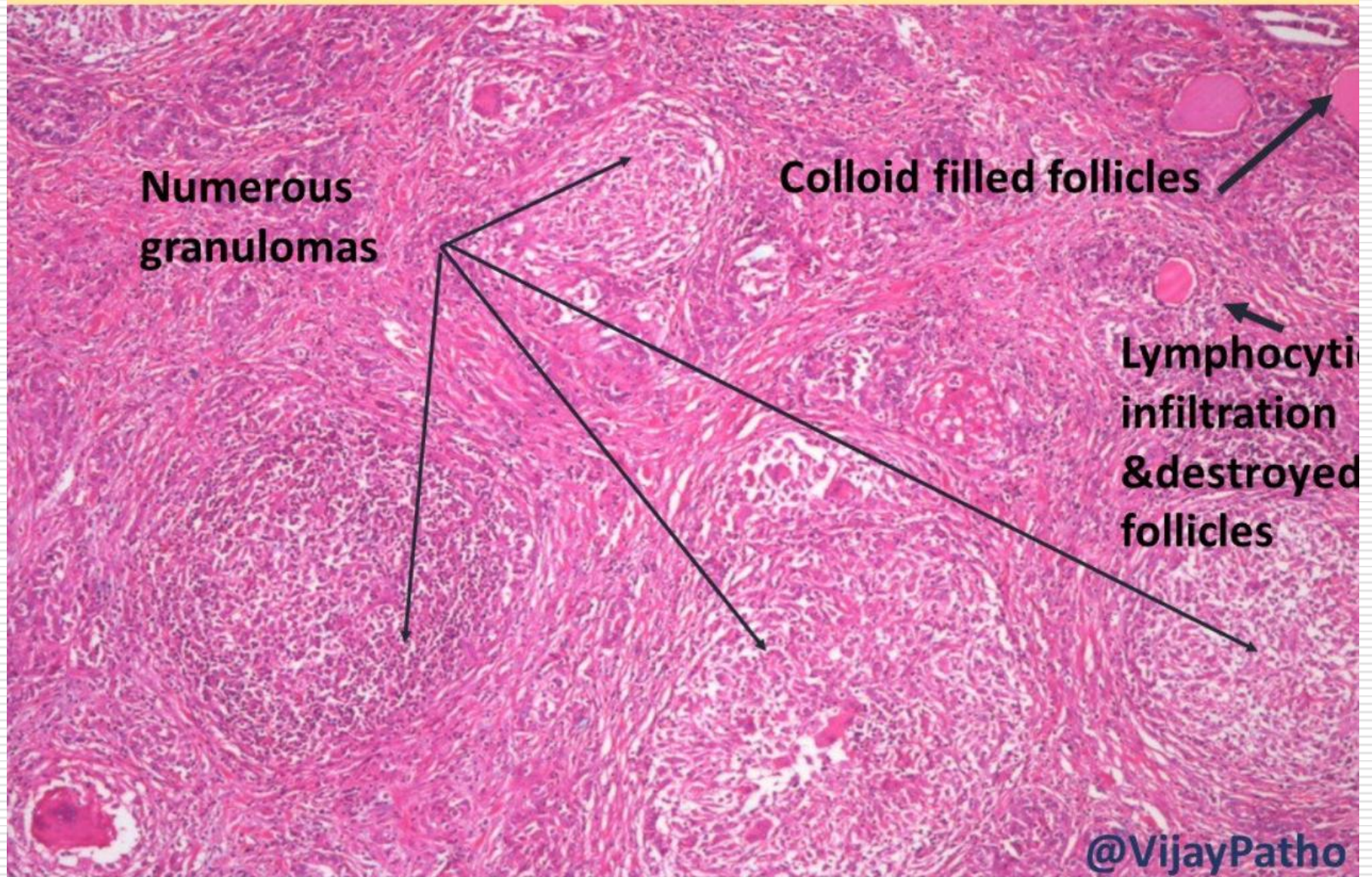
Cut surface :
the affected
areas are firm
and white and
are ill defined.

1cm

@VijayPatho

FNA samo ako postoji nodularnost i sumnja na malignitet!

SUBACUTE THYROIDITIS (De Quervain thyroiditis/ Granulomatous thyroiditis)



Granulomatozni (subakutni, de Quervain) tireoiditis

- Celularnost i sastav varijabilni, zavise od stadijuma bolesti

 - Inflamatorne ćelije:
 - Rani stadijum: neutrofili i eozinofili;

 - Kasnija faza: džinovske višejedarne ćelije, epiteloidne ćelije, limfociti, makrofagi, folikularne ćelije

 - Involutivna faza: nema džinovskih i inflamatornih ćelija. Pojedini uzorci mogu biti neadekvatni.
-

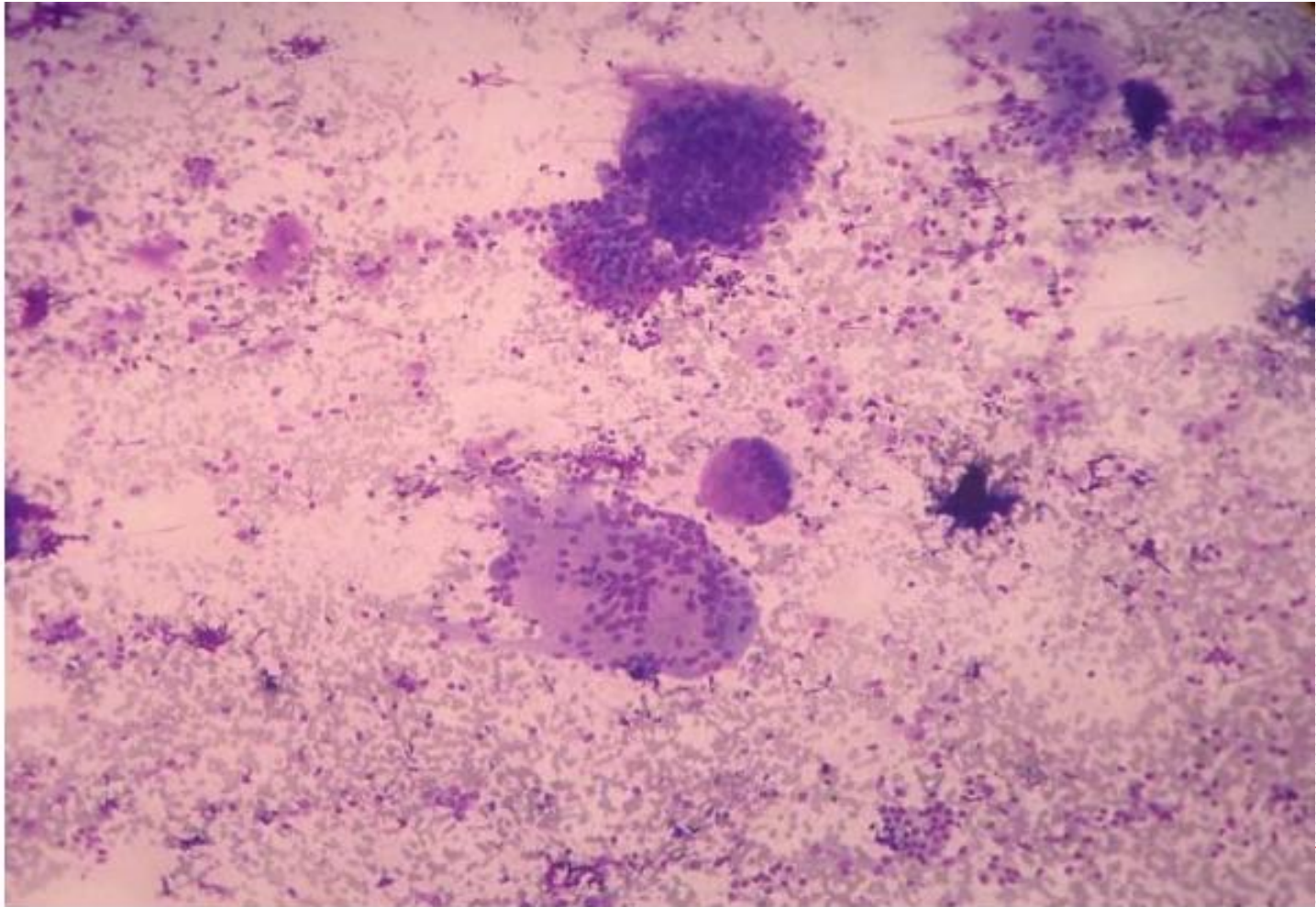
Granulomatozni (subakutni, de Quervain) tireoiditis

□ Kriterijumi:

- Granulomi
- Džinovske višejedarne ćelije
- Folikularne ćelije
- Koloid
- Prljava pozadina
- Mešane inflamatorne ćelije, dominatno limfociti i makrofagi

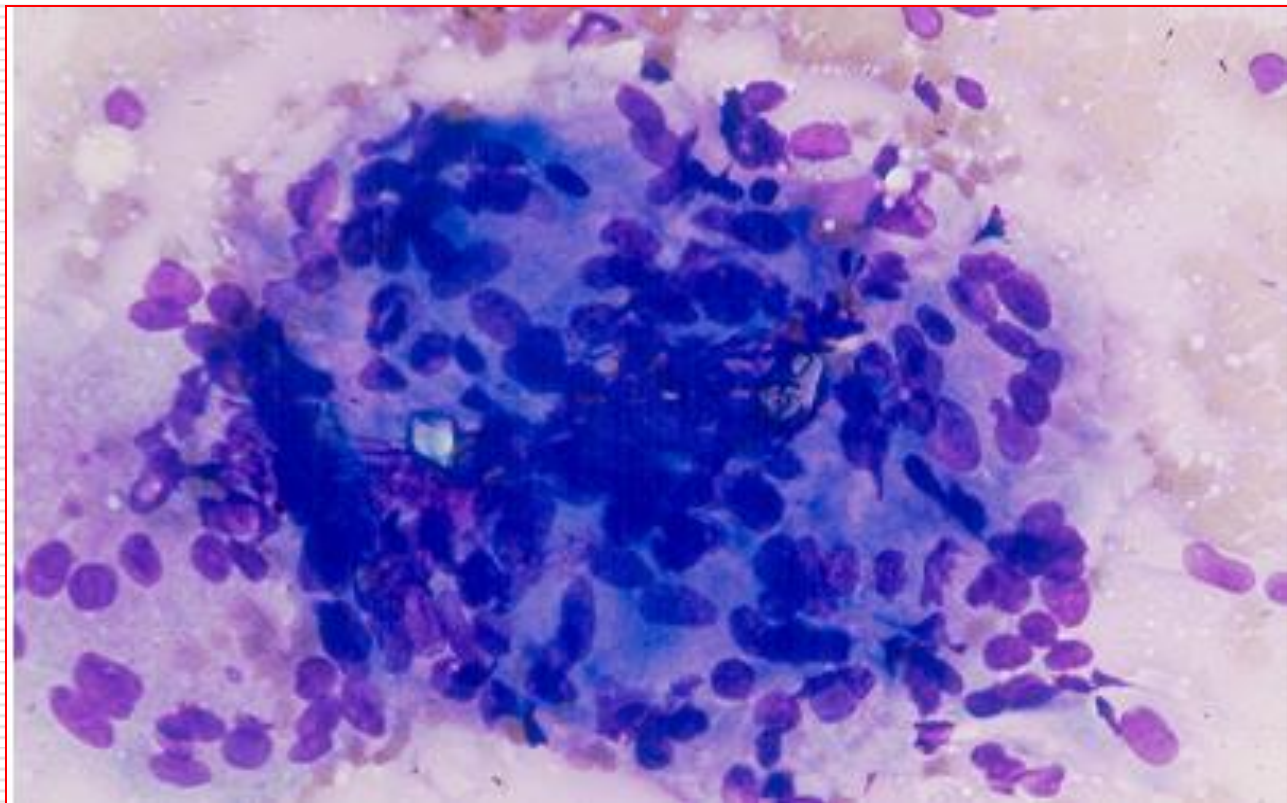
U odsustvu granuloma, citološki nalaz je nespecifičan

Granulomatozni (subakutni, de Quervain) tireoiditis

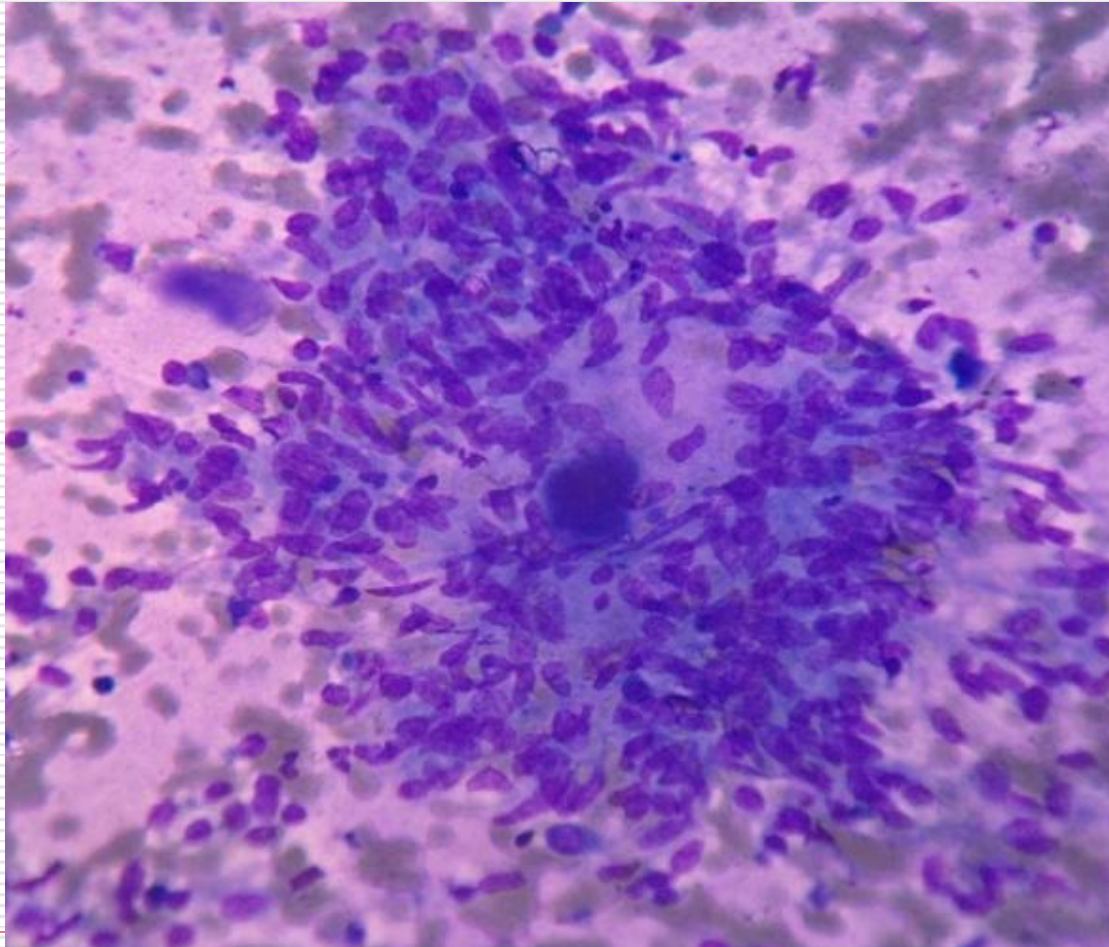


Granulomatozni (subakutni, de Quervain) tireoiditis

* Epiteloidno ćelijski granulom

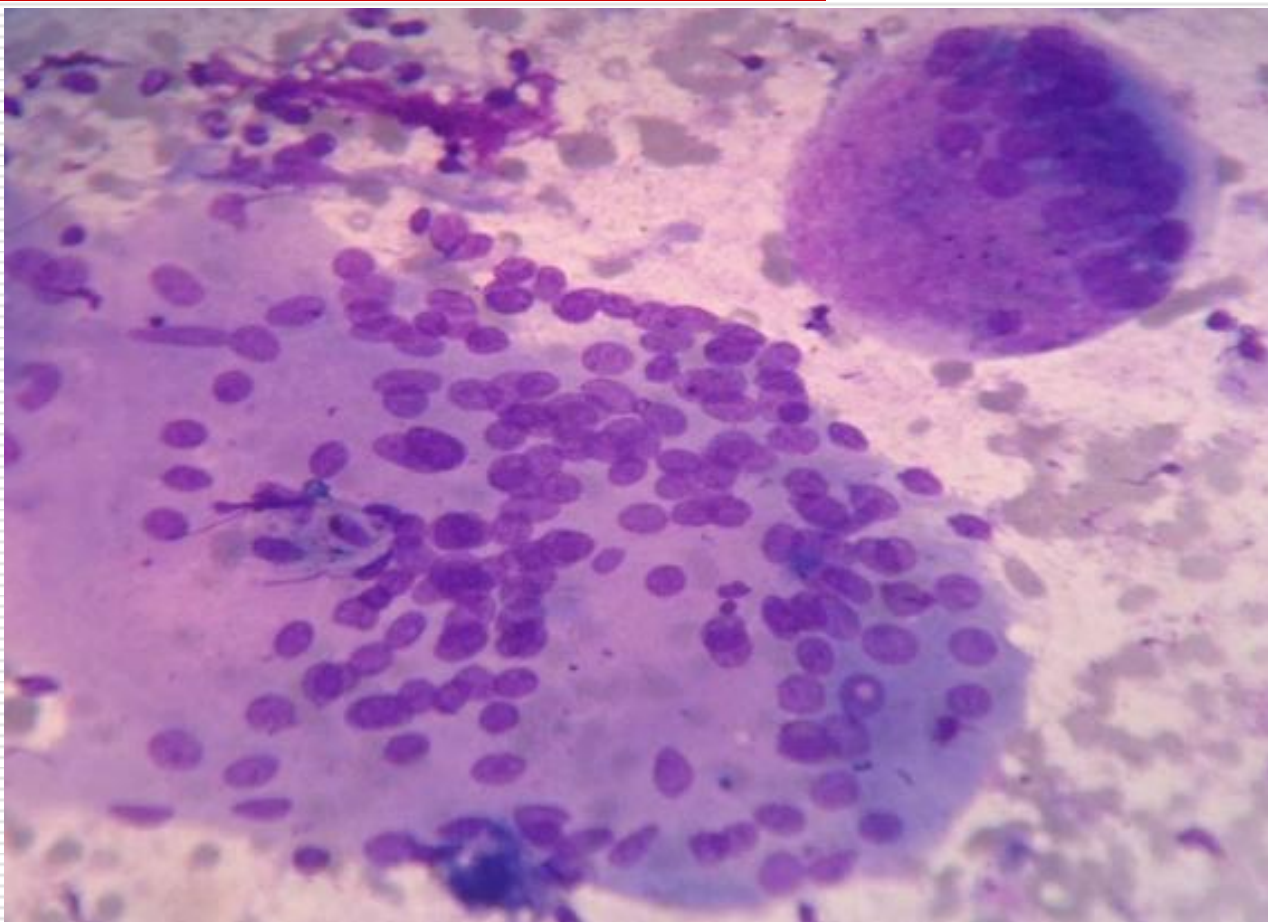


Granulomatozni (subakutni, de Quervain) tireoiditis



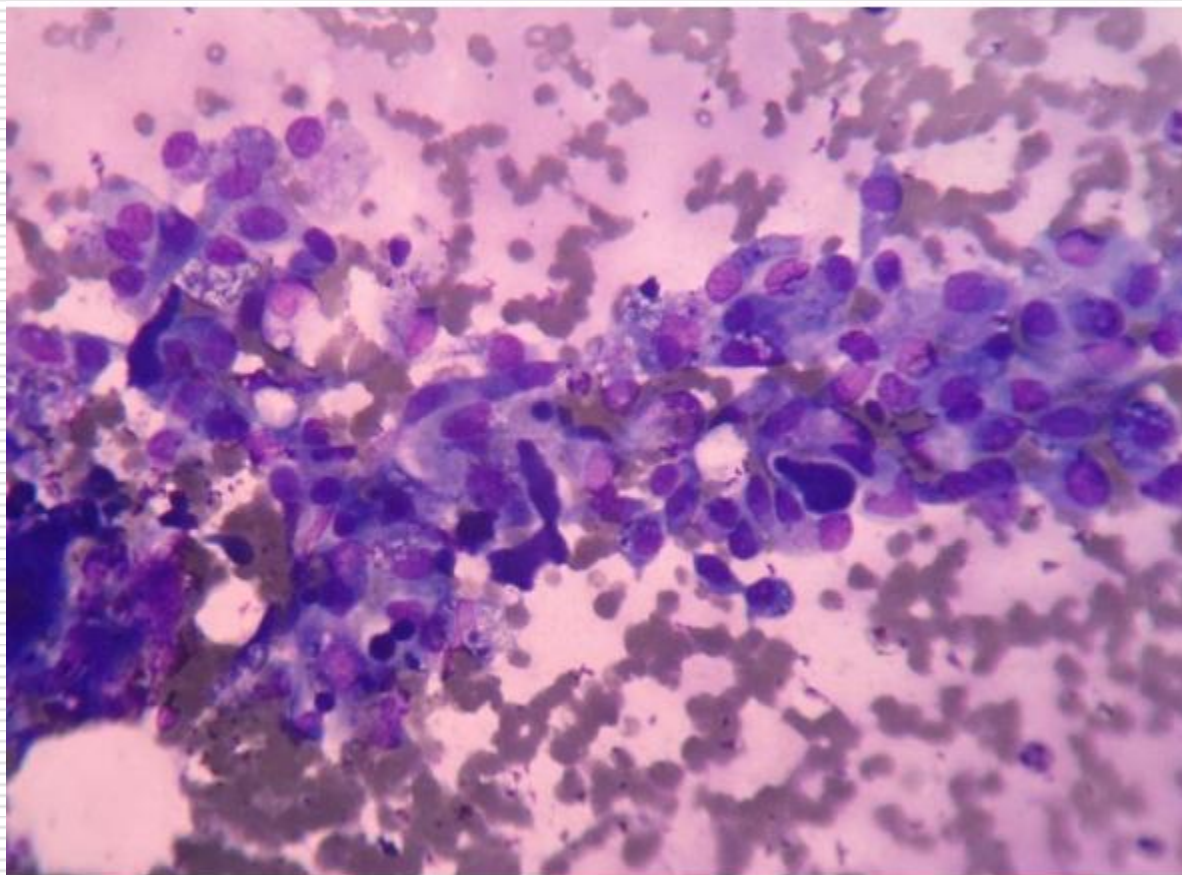
Granulom epiteloidnih ćelija sa ingestiranim koloidom

Granulomatozni (subakutni, de Quervain) tireoiditis



Džinovske višejedarne ćelije (MGG)

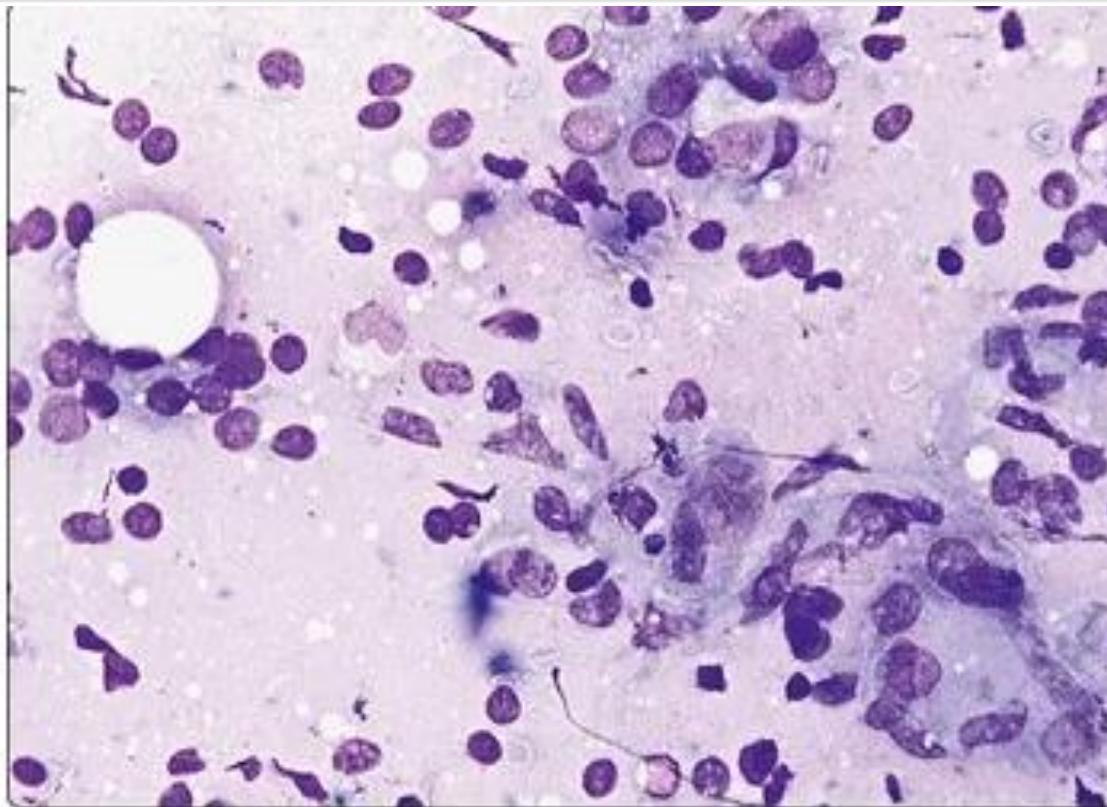
Granulomatozni (subakutni, de Quervain) tireoiditis



Folikularne ćelije sa degenerativnim promenama uz debeo kolod (MGG).

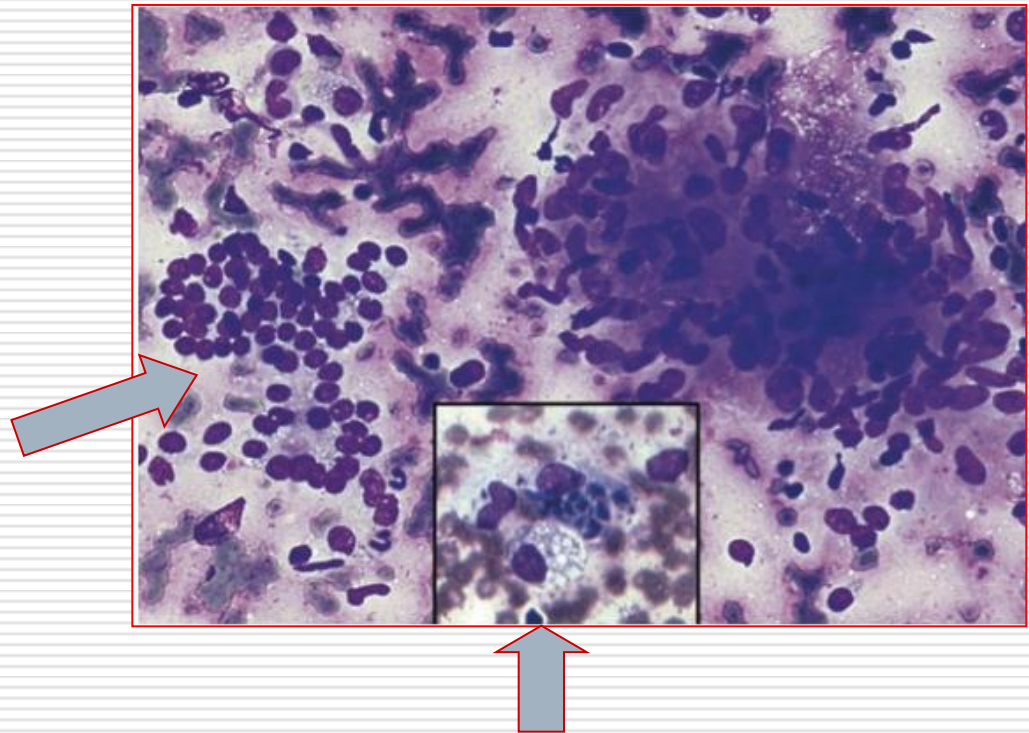
Granulomatozni (subakutni, de Quervain) tireoiditis

- Histiociti, degenerisane epitelne ćelije, limfociti na prljavoj pozadini sa koloidom (MGG)



Granulomatozni (subakutni, de Quervain) tireoiditis

- ❑ Makrofag sa fagocitiranim koloidom (detalj)
- ❑ Retke degenerisane folikularne ćelije

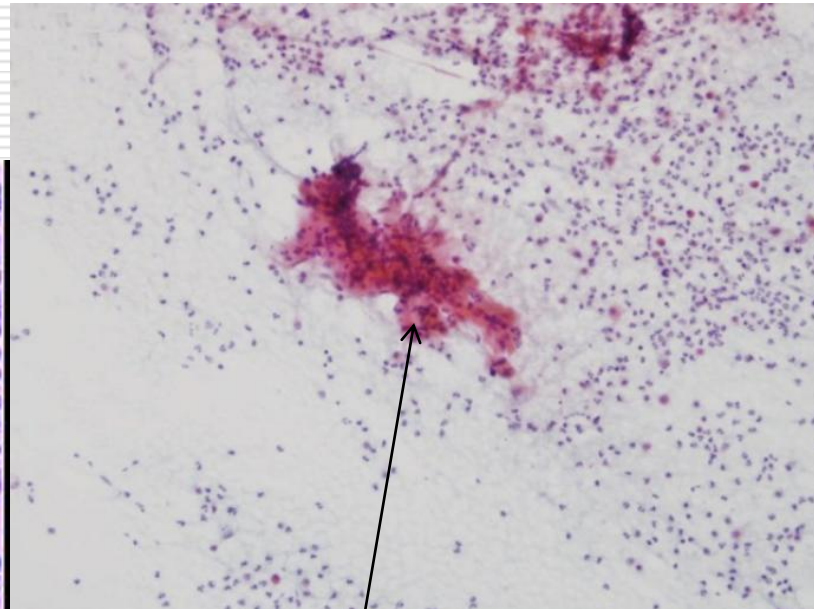
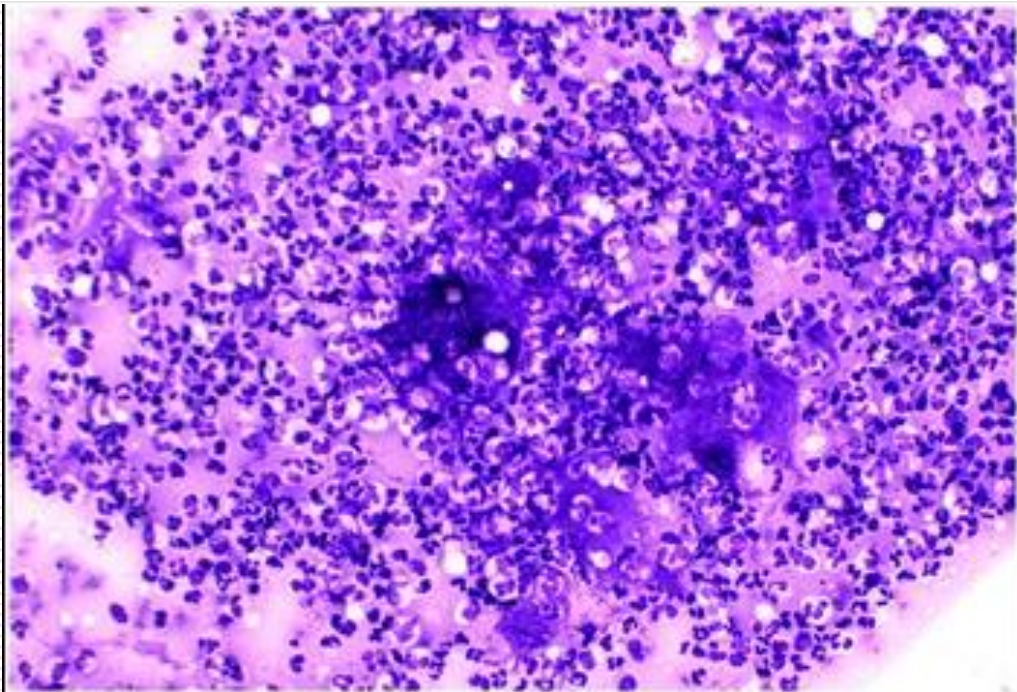


Akutni tireoiditis

- Virusni
- Bakterijski
- Gljivični...

Akutni tireoiditis

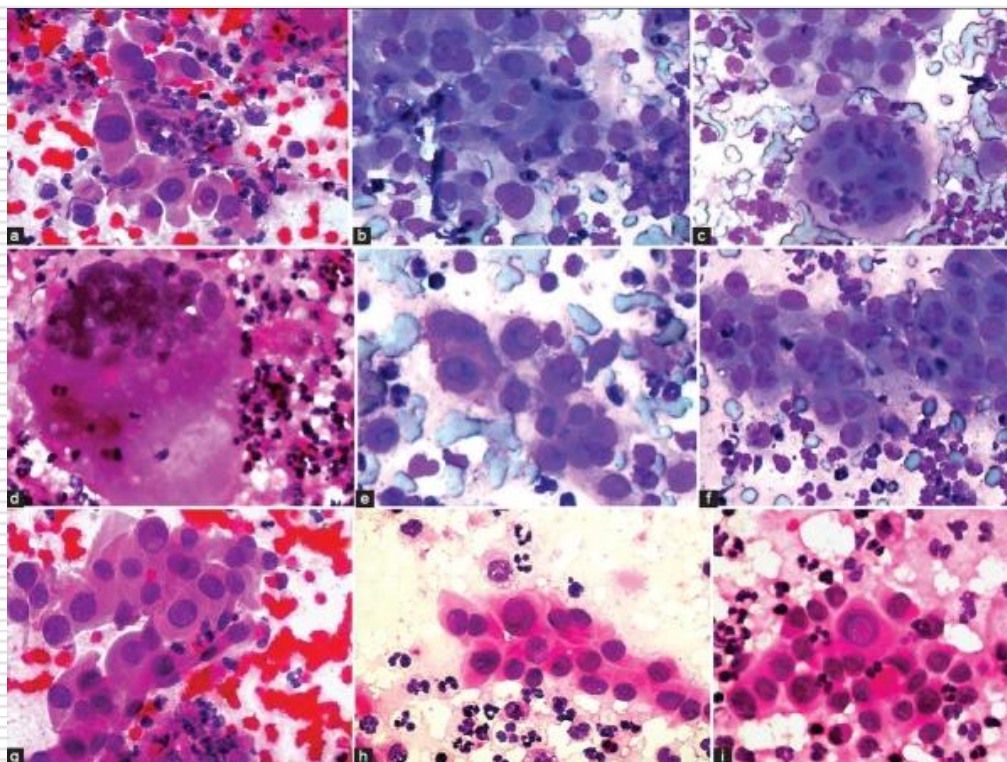
- Brojni neutrofili, fibrin, makrofagi, eritrociti



Stromalne ćelije

Akutni tireoiditis

- ❑ Reaktivne folikularne ćelije
- ❑ Koloid prisutan u malim količinama ili odsutan
- ❑ Uzročnici (bakterije i gljivice) se mogu dokazati specijalnim bojenjem ili kulturom

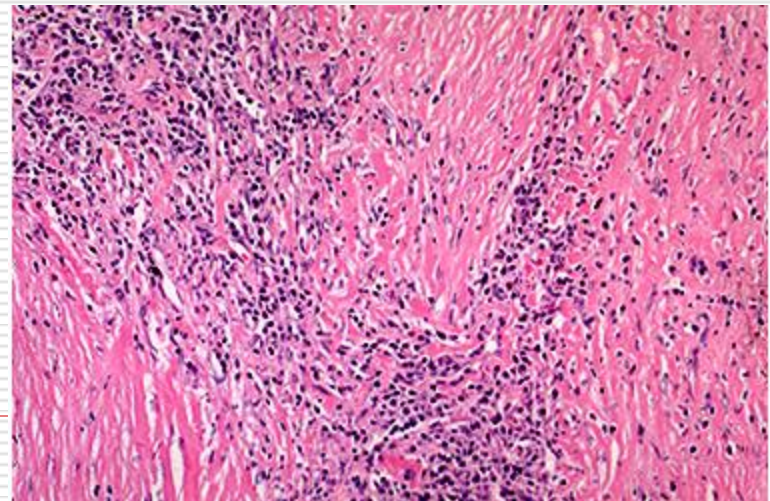
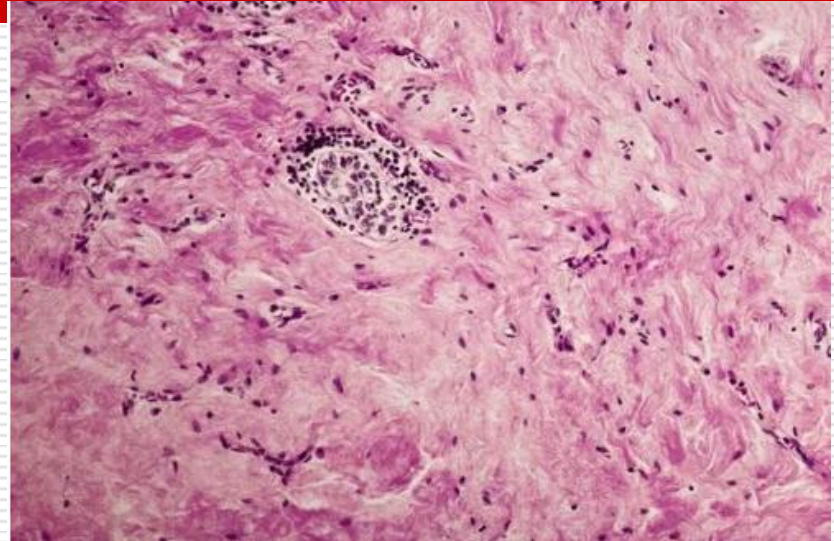


Riedelov tireoiditis

Riedelov tireoiditis

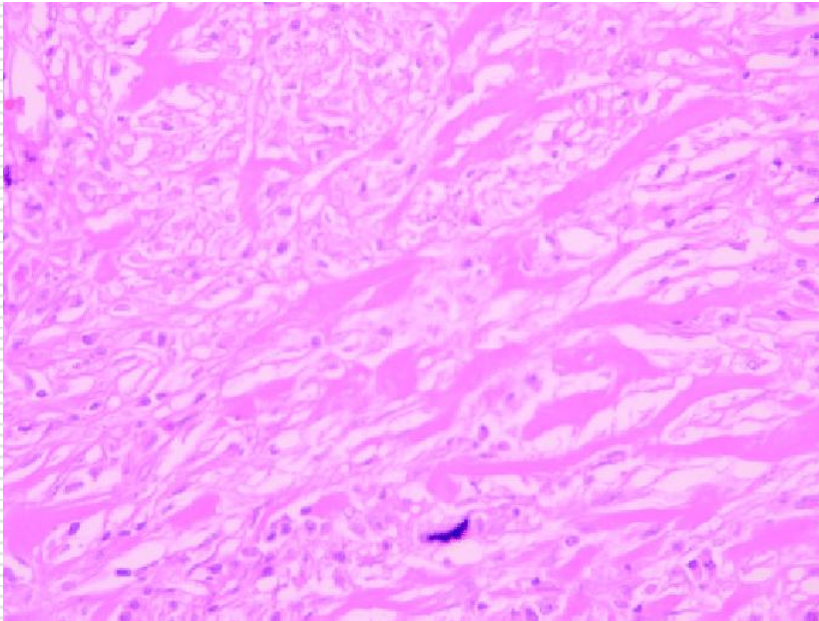


Wooden-looking aspekt

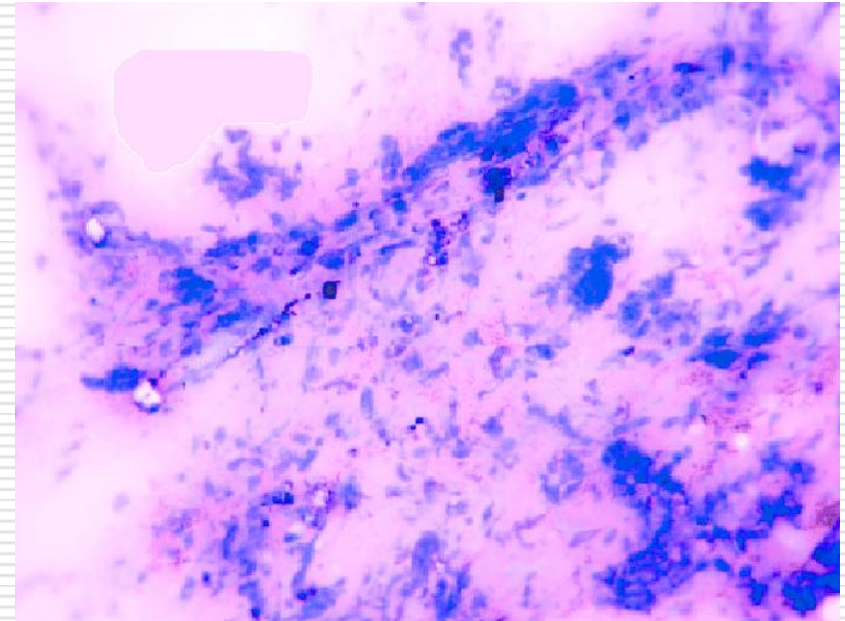


Riedelov tireoiditis

Najčešće acelularni razmazi



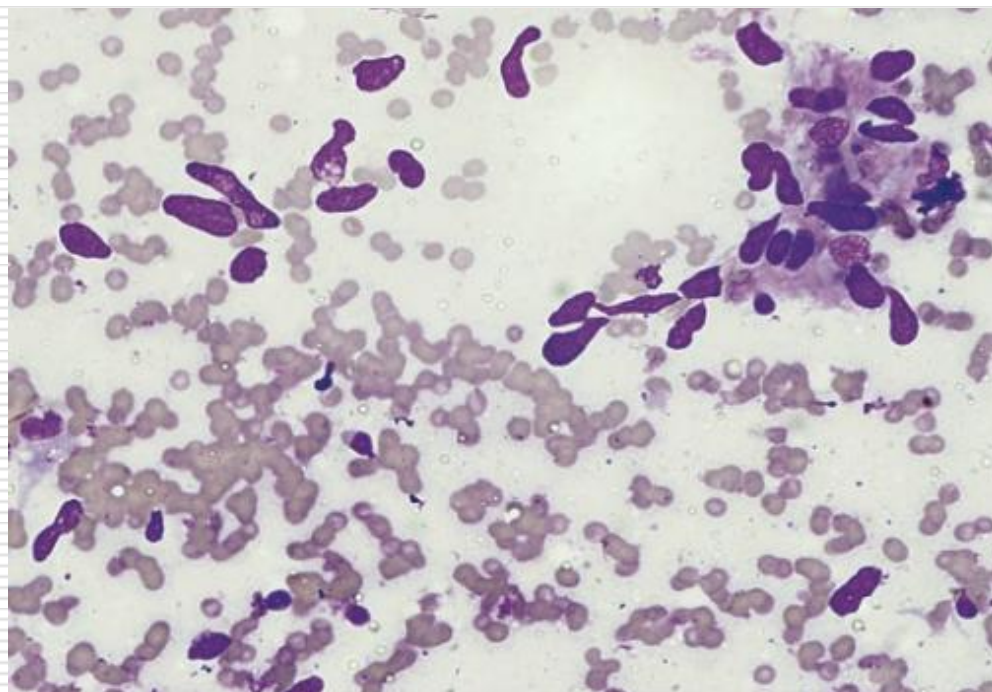
Gusto hijalinizovano vezivo
sa multifokalnim infiltratima
Ly, PĆ, Ma



Fibrozno tkivo sa nekoliko PMN, Ly

Riedelov tireoiditis

- ☐ Hipocelularni razmazi
- ☐ Nabubrele vretenaste ćelije
- ☐ Koloid i folikularne ćelije uglavnom nisu prisutni



Citološki izveštaj

BENIGNO

Benigni folikularni nodus, konzistentan sa koloidnim nodusom

BENIGNO

Brojne polimorfne limfoidne ćelije i razbacane Hurthle ćelije.
Nalaz konzistentan sa limfocitnim (Hashimoto) tireoiditisom.

BENIGNO

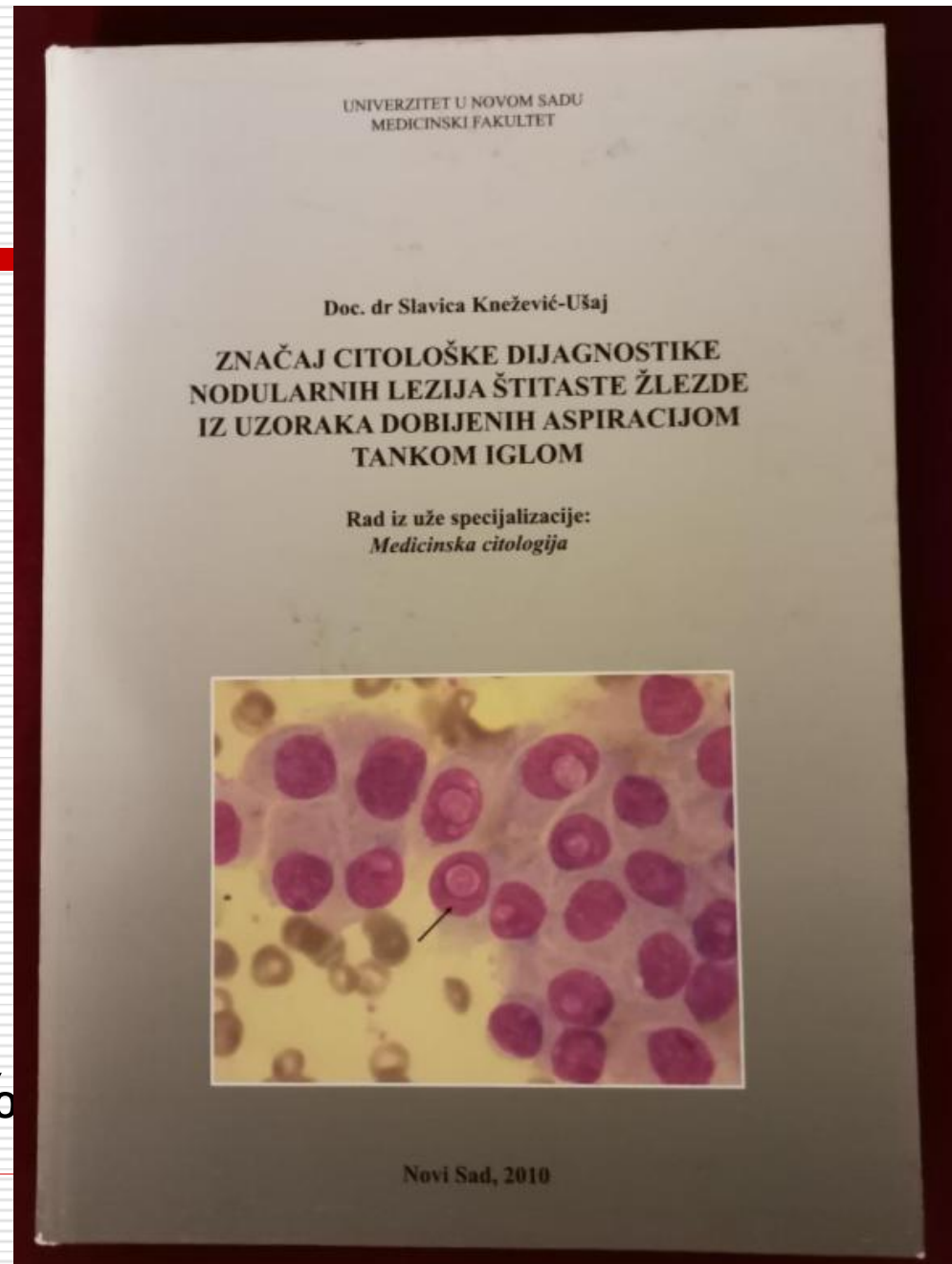
Proteinski materijal, makrofagi, retke benigne loše očuvane skvamozne ćelije.
Nalaz konzistentan sa benignom cistom, moguće cistom tireoglosalnog kanala.
Potrebna klinička korelacija

Benigno

- **Najčešća dx, 53-90%, prosečno 65%**
 - **Lažno negativni nalazi retki**
 - $<3\%$
 - **Bolesnici sa hirurškim praćenjem**
 - 5-10% rizik maligniteta
-

Benigno

- 266 pacijenata
- FNAC
- Difuzne-3%
- Nodularne-89%
 - Solitarne-55%
 - Multiple -34%
- Nema podatka-8%
- Benigno-62%
- Lažno negativni-2.9%



Benigno

- Periodični klinički pregledi u intervalima 6-18 meseci tokom 3-5 godina
 - Ponavljanje FNA:
 - brz rast nodusa,
 - pojava patoloških promena na UZ: mikrokalcikacija, iregularnih margina, intranodalne hipervaskularizacije, hipoehogenost u solidnim područjima
-

Diferencijalna dijagnoza

- ☐ Folikularni adenom
 - ☐ Folikularni karcinom
 - ☐ Folikularna varijanta papilarnog karcinoma
 - ☐ Noninvazivna folikularna neoplazma sa papilarnom-like nuklearnom slikom
-

HALANAPAZU

