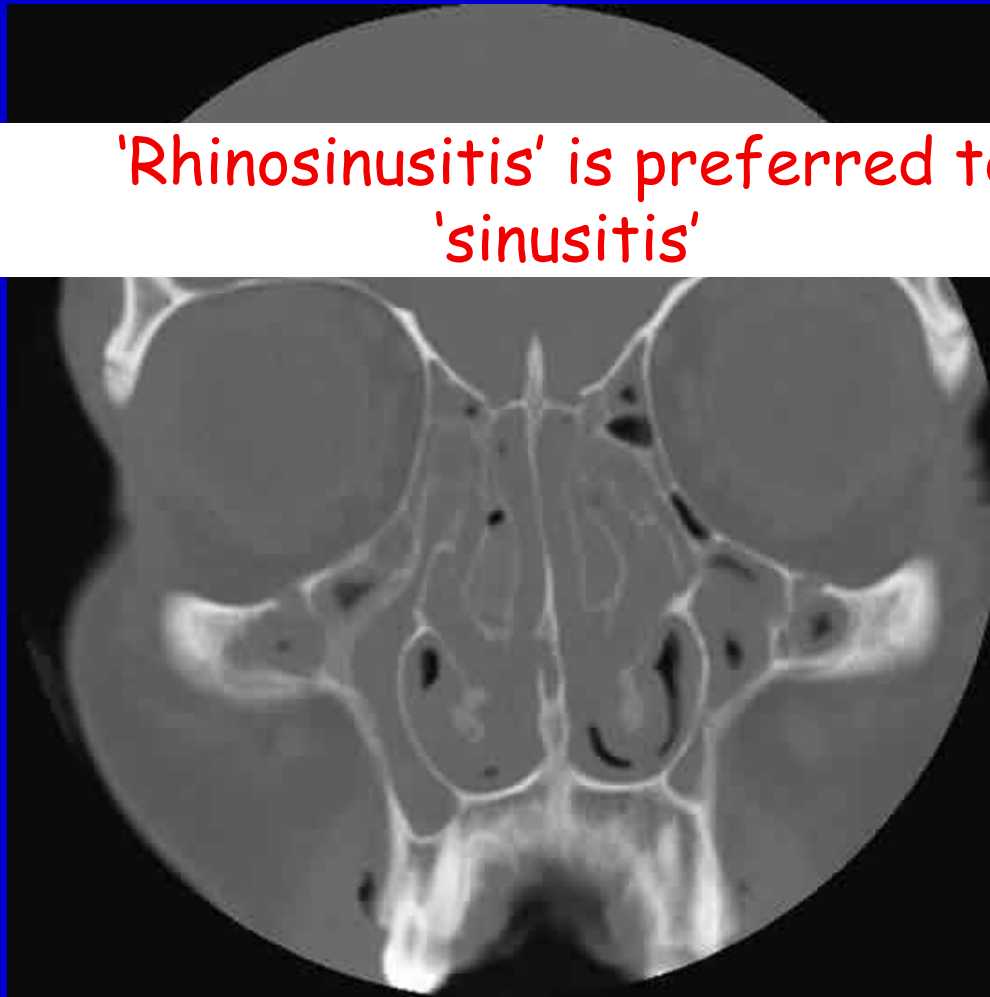


# Fungal rhinosinusitis - a categorization and definitional schema

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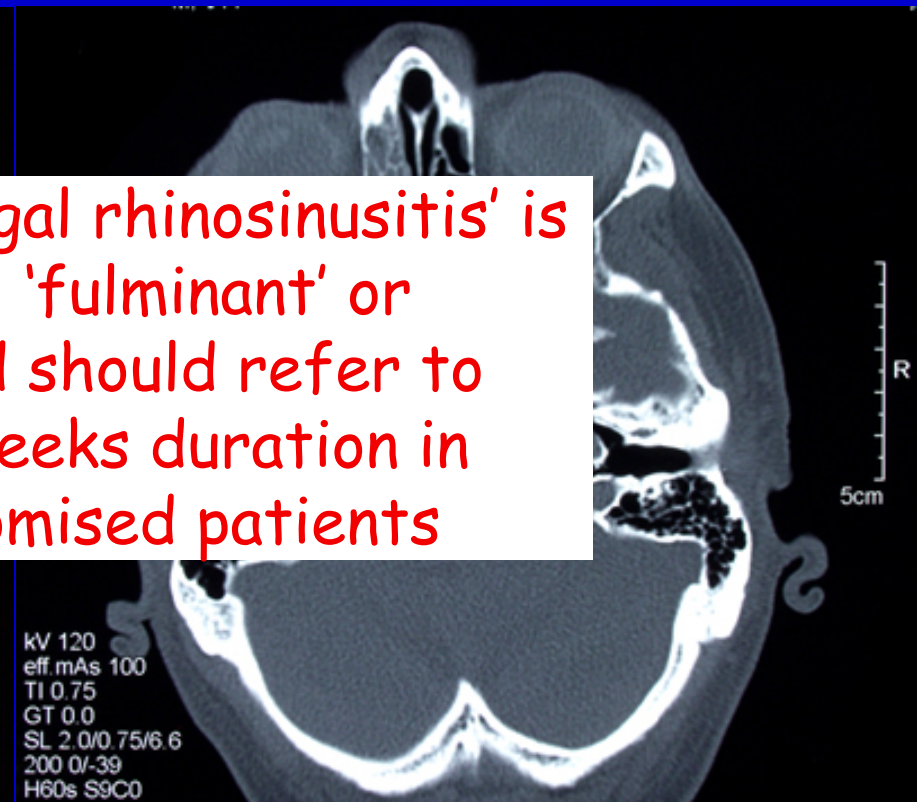
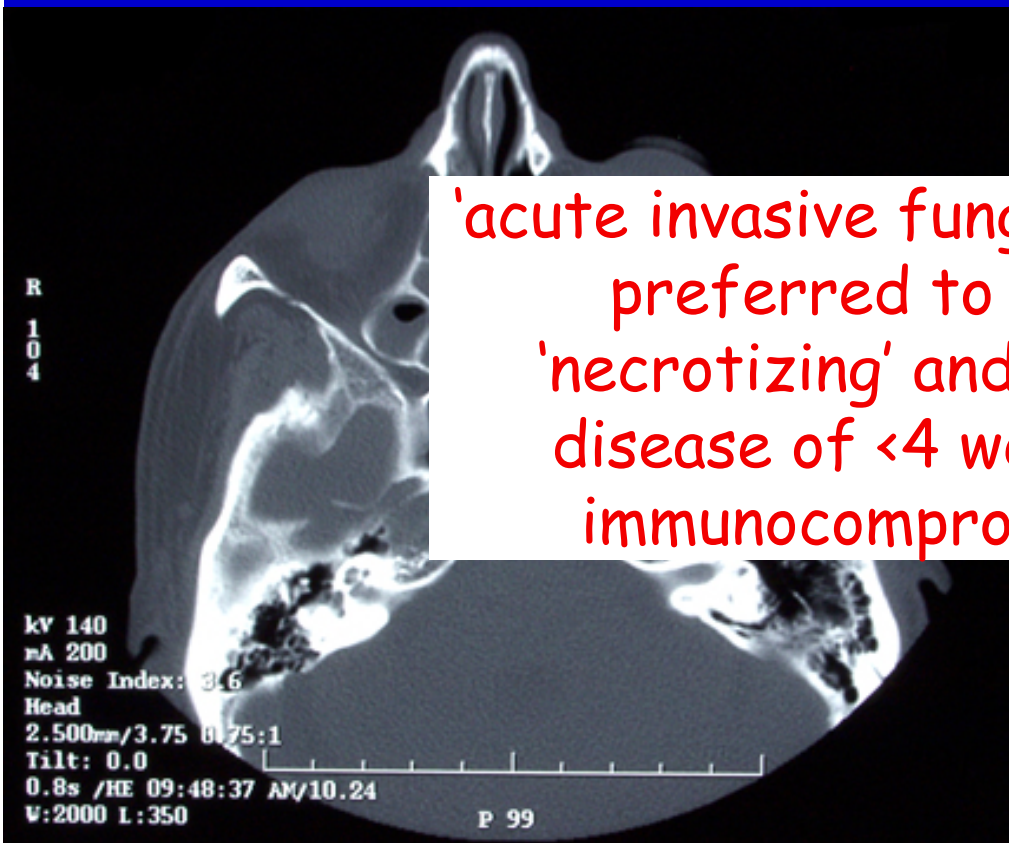
# Eosinophilic fungal rhinosinusitis

'Rhinosinusitis' is preferred to  
'sinusitis'



# Myelodysplasia with clinical evidence of sinusitis after chemotherapy - biopsy showed hyphal invasion of bone

'acute invasive fungal rhinosinusitis' is preferred to 'fulminant' or 'necrotizing' and should refer to disease of <4 weeks duration in immunocompromised patients



Diabetic with swelling, nasal  
obstruction and epistaxis  
*A. terreus* cultured



# Chronic invasive Aspergillus rhinosinusitis

Pathological features

Radiological features

Clinical setting

Direct evidence to implicate  
*Aspergillus* spp.

Indirect evidence to implicate  
*Aspergillus* spp.

Chronic invasive sinusitis

Infiltrative mixed inflammatory infiltrate, inflammation, necrosis, invasive contiguous structures

Chronic granulomatous sinusitis

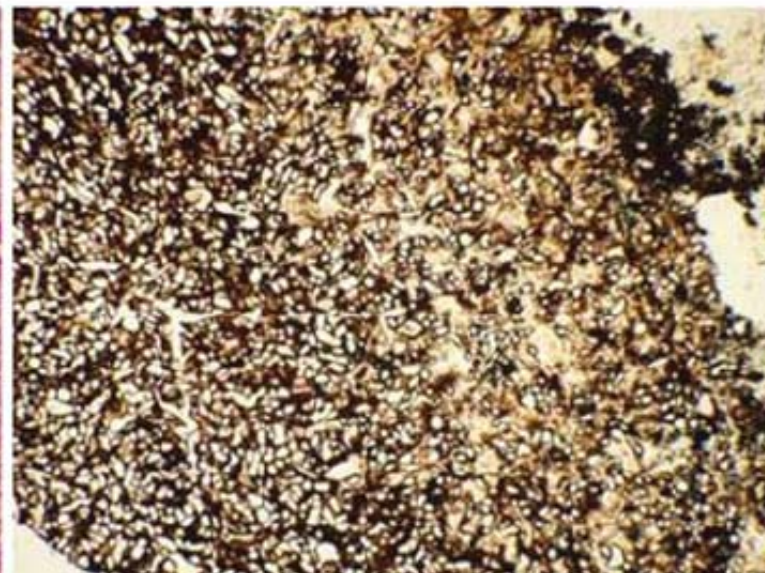
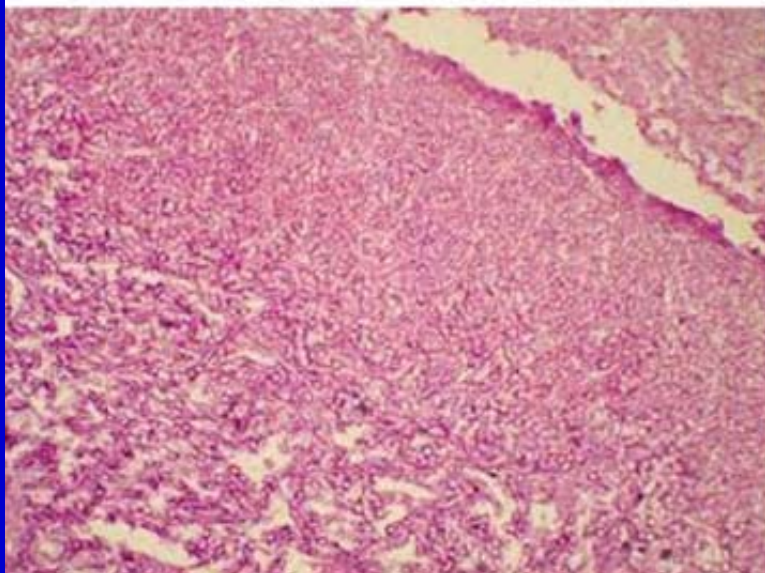
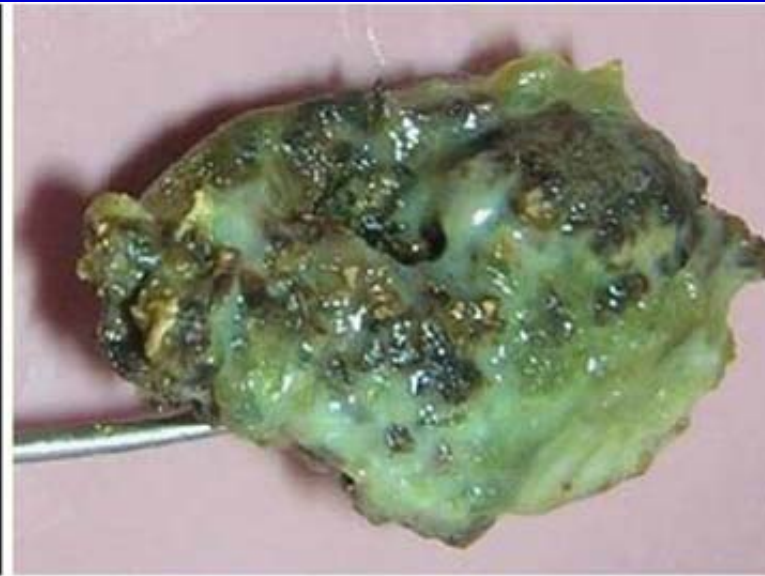
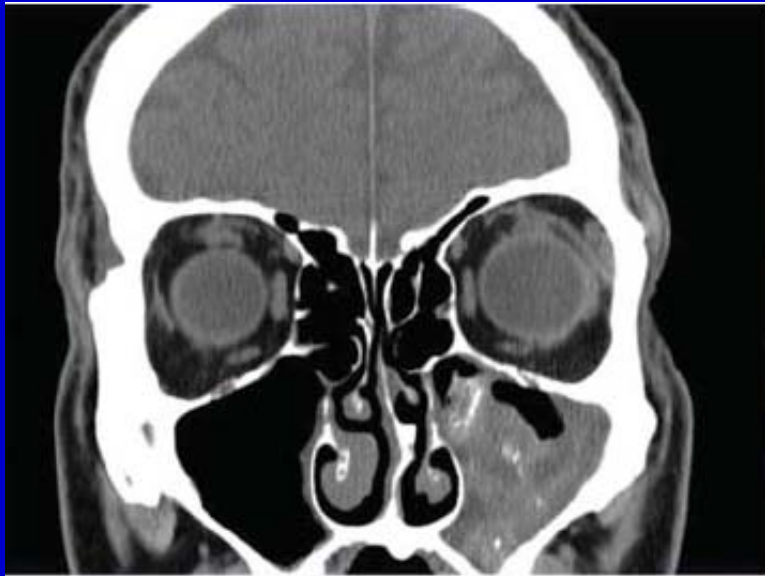
Infiltrative mixed inflammatory infiltrate, spread to the orbit

'chronic invasive rhinosinusitis' and 'granulomatous rhinosinusitis' were useful terms encompassing locally invasive disease over at least 3 months duration, with differing pathology and clinical settings

over/probable IA at non-contiguous sites  
positive precipitating antibodies  
*Aspergillus* spp.

Chronic *Aspergillus* granulomatous sinusitis  
= *A. flavus*

# Saprophytic fungal rhinosinusitis



# Fungus ball of the (paranasal)sinus

Pathological features

Radiological features

Clinical setting

Direct evidence to implicate  
*Aspergillus* spp.

Indirect evidence to implicate  
*Aspergillus* spp.

'fungal ball of the sinus' is preferred  
to either 'mycetoma' or 'aspergilloma'  
of the sinuses

Sinus aspergilloma

Fungal ball comprised of  
cheesy friable material,  
conglomerate of hyphae in  
concentric circles, no evidence  
of bone erosion

Maxillary sinusitis  
opacification with  
concretions or antroliths

Older person with some  
pre-existing sinus  
abnormality

*Aspergillus* spp. (culture or  
histology) from sinus aspirate or  
surgically removed material

Positive precipitating antibodies  
to *Aspergillus* spp.

# Localized fungal colonization of nasal or paranasal mucosa

'localized fungal colonization of nasal or paranasal mucosa' should be introduced to refer to localized infection visualized endoscopically, which is not (yet) invasive or a fungus ball



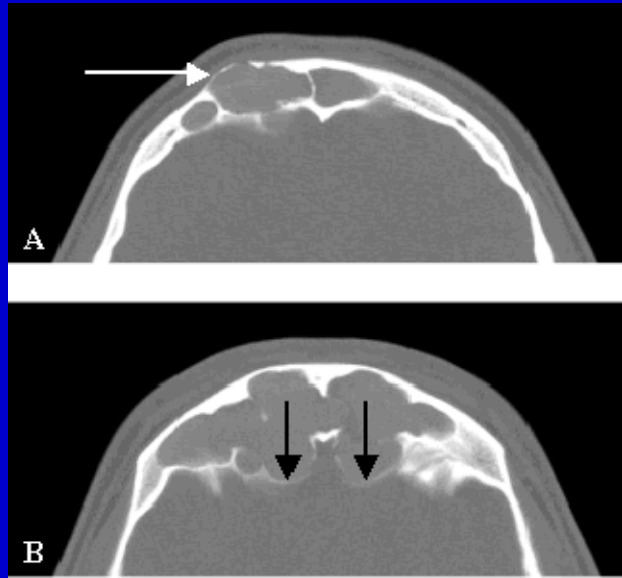
# Mucin

'eosinophilic mucin' is preferred to 'allergic mucin'

# Terminology for "allergic rhinosinusitis"

the terms 'allergic fungal rhinosinusitis' (AFRS), 'eosinophilic fungal rhinosinusitis' and 'eosinophilic mucin rhinosinusitis' (EMRS) are imprecise and require better definition

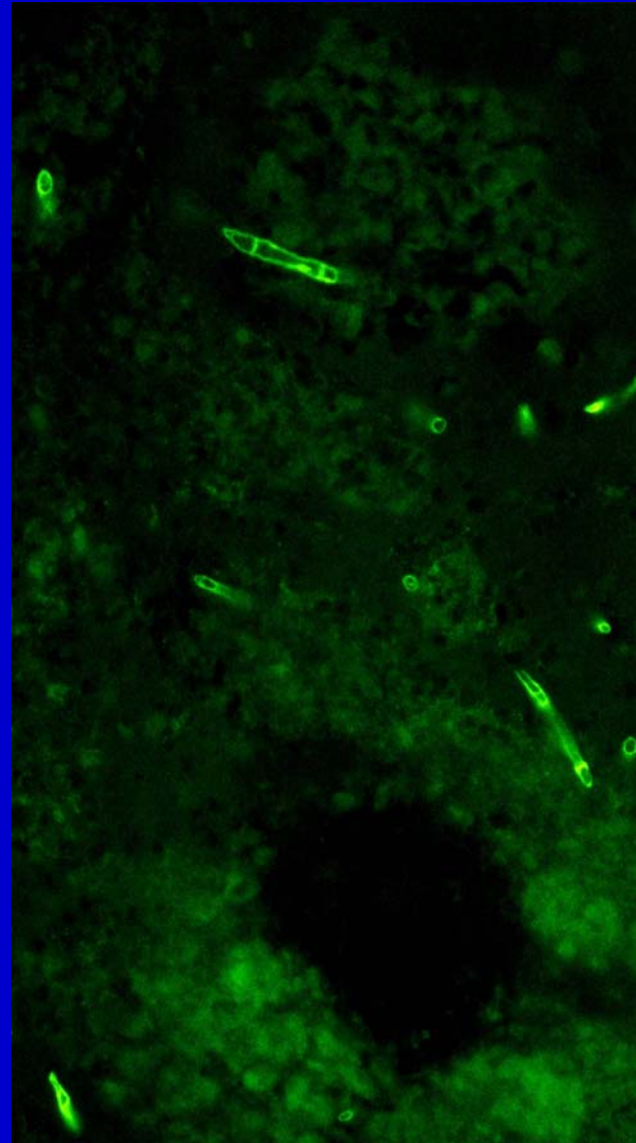
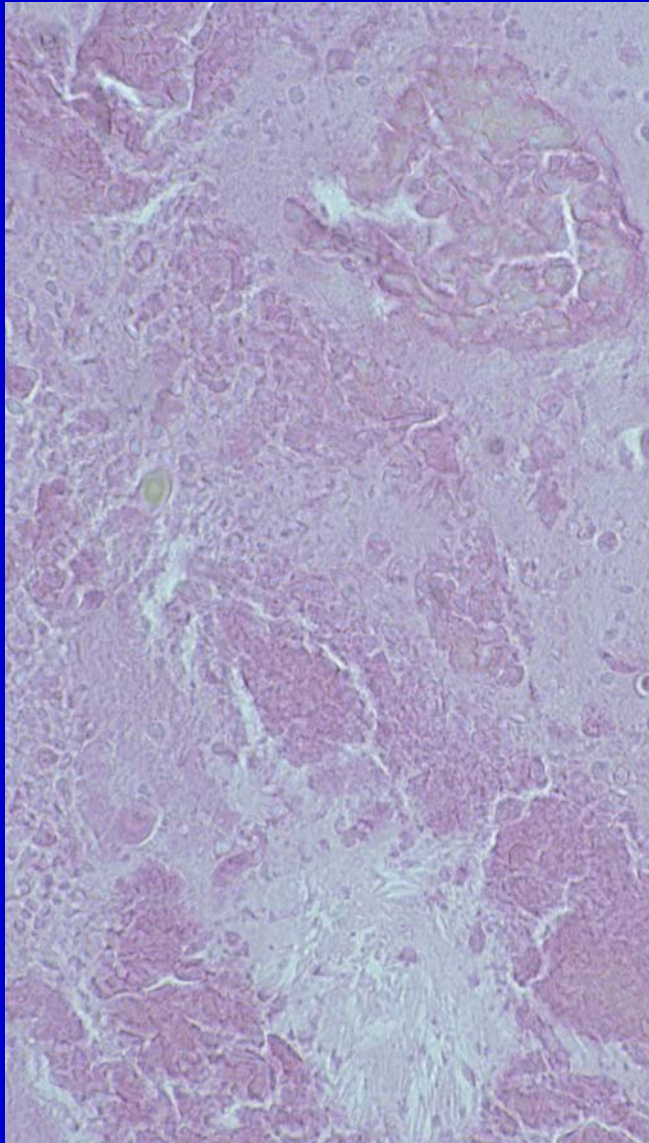
# Eosinophilic fungal rhinosinusitis

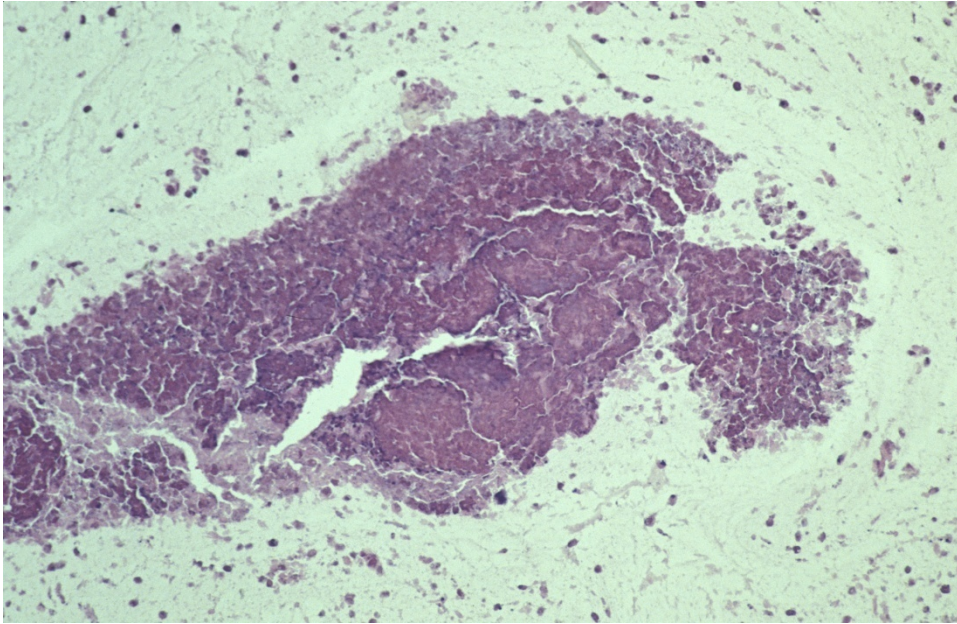


Clinical features = nasal obstruction, recurrent sinus infections, loss of smell and nasal polyps

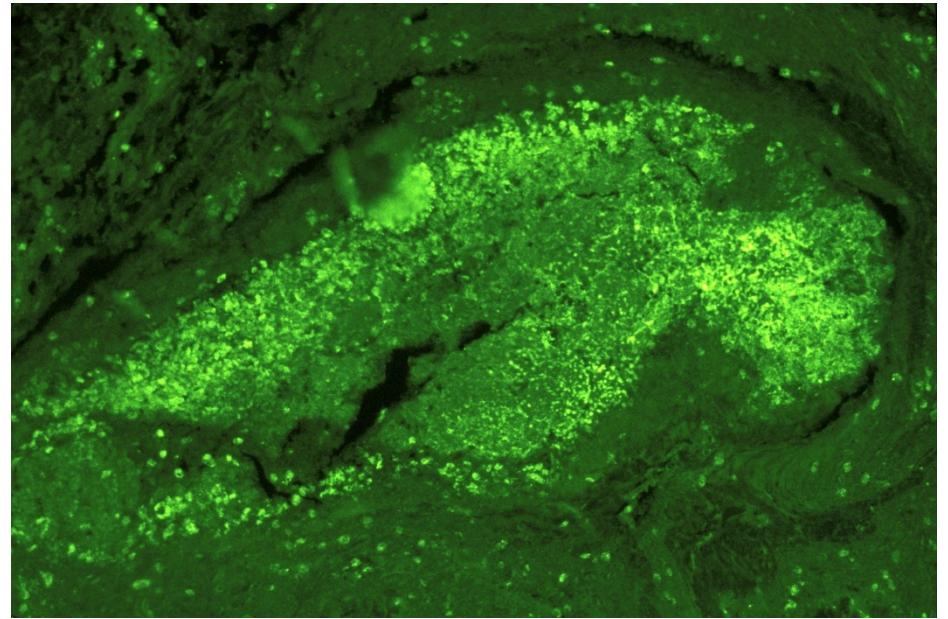
*Aspergillus precipitans* +ve in 85% of original series

# Eosinophilic fungal rhinosinusitis - hunting for fungi





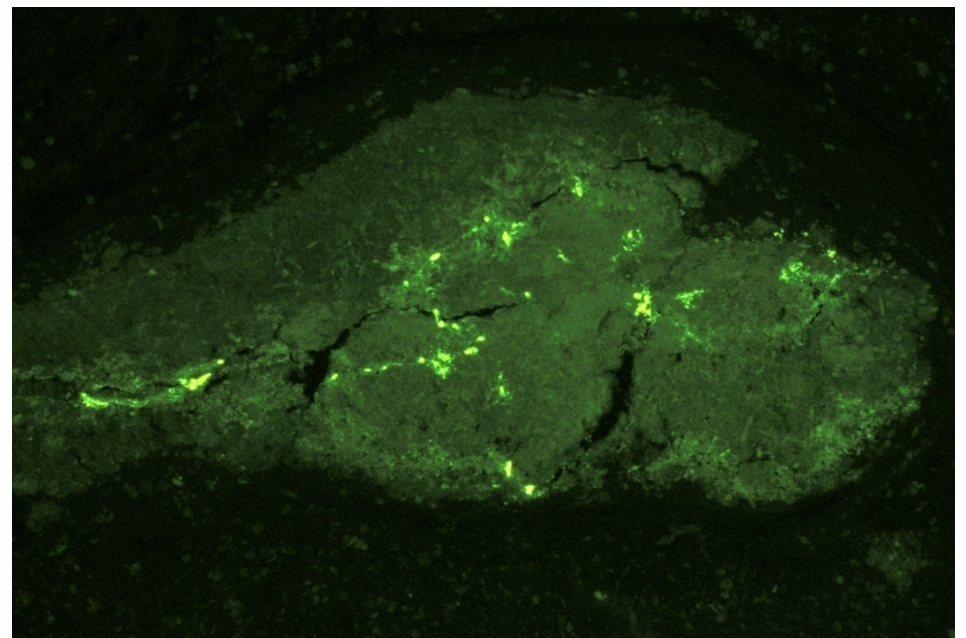
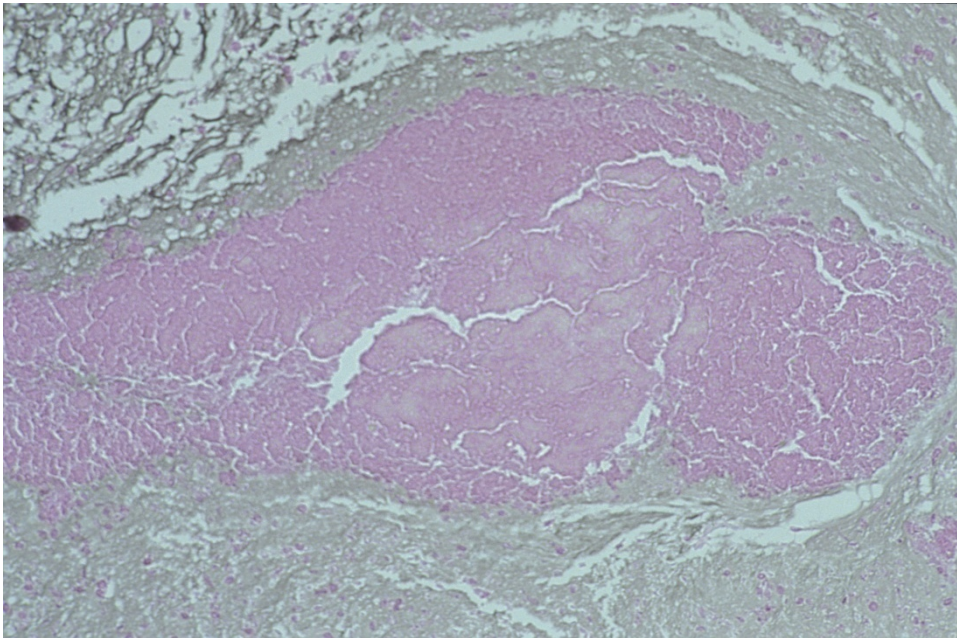
H&E



Anti-MBP

GMS

Anti-Alternaria



# Chronic rhinosinusitis

Non-fungal rhinosinusitis  
(no hyphae seen)

Fungal rhinosinusitis  
(hyphae visualised in mucin)

## Eosinophilic mucin

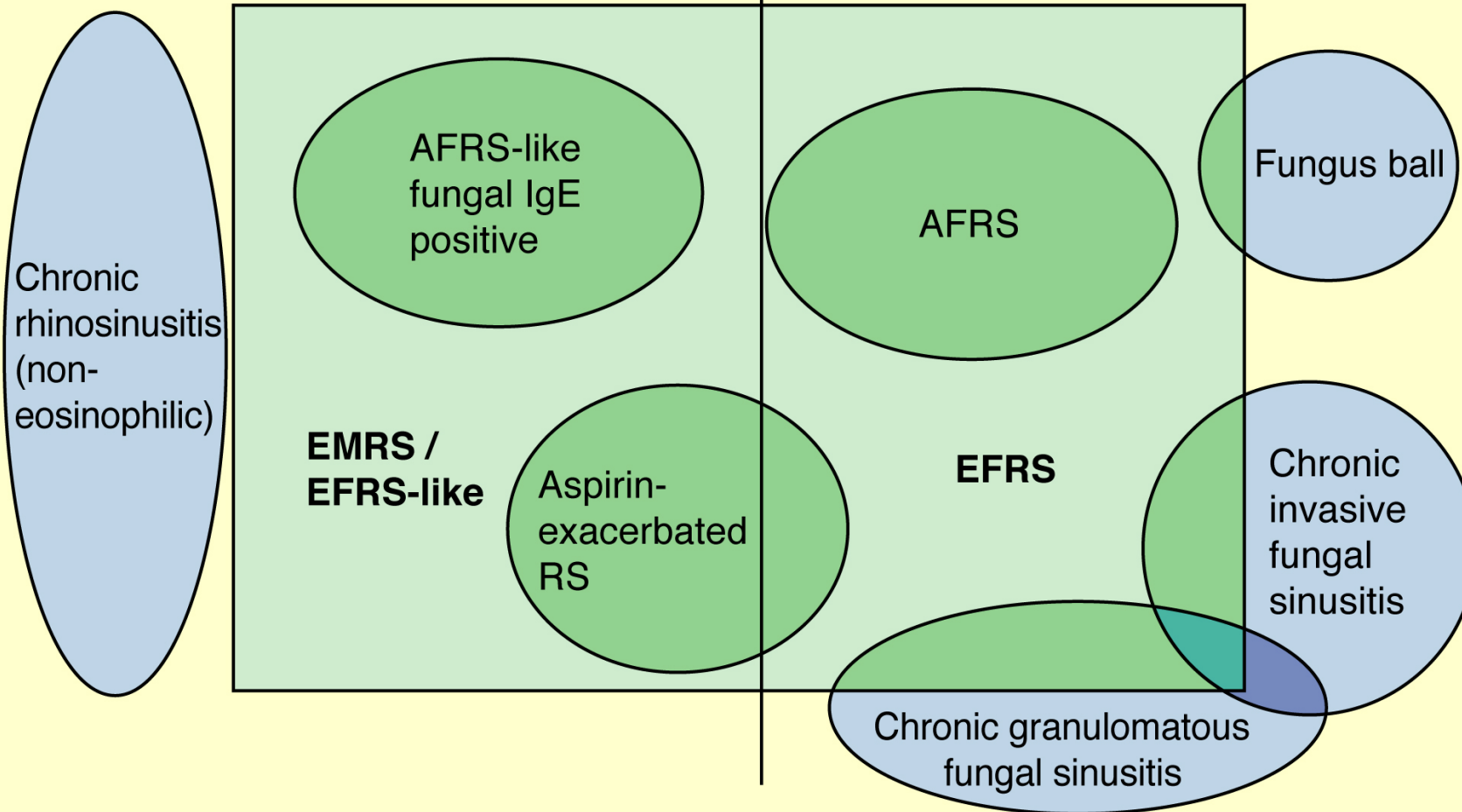




TABLE I.  
Consensus Developed During Panel Discussion About the Controversies.

SI No.	Controversy	Consensus
1	Fungal rhinosinusitis or fungal sinusitis?	Fungal rhinosinusitis
2	Acute invasive, fulminant, or necrotizing fungal rhinosinusitis?	Acute invasive fungal rhinosinusitis (when etiological agent is known, e.g., acute invasive <i>Aspergillus</i> rhinosinusitis)
3	Distinction between acute and chronic FRS	Acute when duration is <1 month Chronic when duration is >3 months Subacute when duration 1–3 months
4	Are granulomatous and chronic FRS separate entities?	Keep the entities separate until more data clarify the facts
5	Fungal ball, mycetoma, or aspergilloma?	Fungal ball with the description localization + fungal ball ± causative fungus (e.g., maxillary sinus fungal ball due to <i>Aspergillus flavus</i> )
6	Saprophytic fungal infestation of nasal mucosa?	Localized fungal colonization of nasal or paranasal sinus mucosa
7	Allergic mucin or eosinophilic mucin?	Eosinophilic mucin
8	Distinction between AFRS/EFRS/EMRS?	See Fig. 7

FRS = fungal rhinosinusitis; AFRS = allergic fungal rhinosinusitis; EFRS = eosinophilic fungal rhinosinusitis; EMRS = eosinophilic mucin rhinosinusitis.



# 4th ADVANCES AGAINST ASPERGILLOSIS

February 3-6, 2010

Rome, Italy  
Sheraton Roma

[www.AAA2010.org](http://www.AAA2010.org)

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