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Internationale CT-Klassifikation  
für arbeits- und umweltbedingte Erkrankungen  
*Referenzfilme mit Itoh-Zeichnungen*

International CT-Classification of  
Occupational and Environmental Respiratory Diseases  
(IC OERD)

Reference Films:

Selection: International Study Group,

Head: Y. Kusaka

Arrangement: K. G. Hering

Sketches: H. Itoh

# I. Parenchyma

## Reference Films for CT Classification

### I. Parenchymal findings

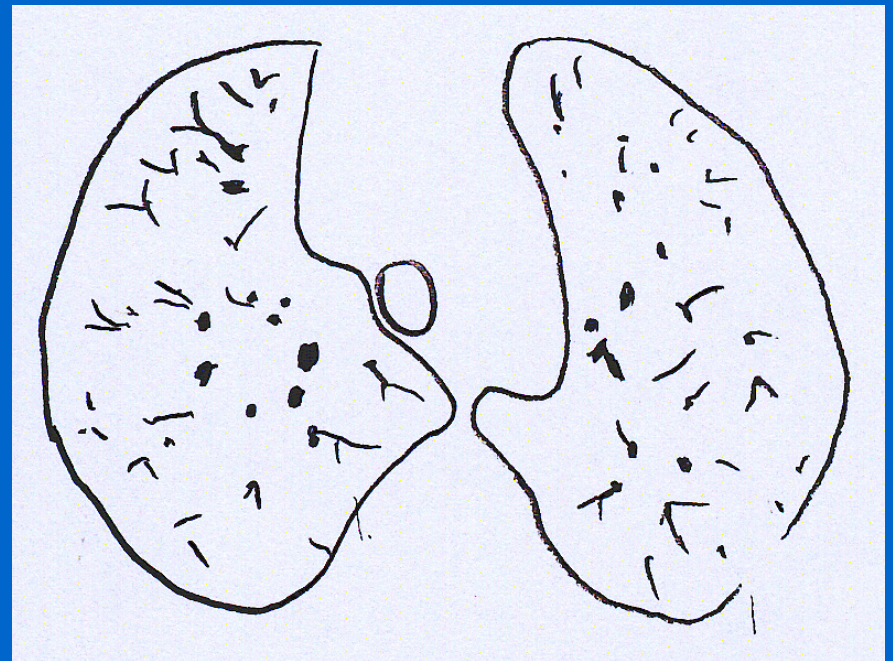
1 <b>R0/IrrGr0</b>	2 <b>R0/IrrGr0</b>	3 <b>R0/IrrGr0</b>
4 <b>R Gr1Q</b>	5 <b>R Gr2P</b>	6 <b>R Gr2Q</b>
7 <b>Irr Gr1</b>	8 <b>Intralobula Gr2</b>	9 <b>Irr Gr2</b>
10 <b>GGO Gr1 -48.0mm</b>	11 <b>GGO Gr2 -164.5mm</b>	12 <b>GGO Gr3 -164.5mm</b>



1	R 0 / Irr 0	No rounded or irregular opacities	None
2	R 0 / Irr 0	No rounded or irregular opacities	Pleural thickening with calcification, parietal type
3	R 0 / Irr 0	No rounded or irregular opacities	Pleural thickening (parietal type) with calcification, extrapleural fat
4	R Gr 1 Q	Rounded, well defined opacities, mainly Q, Grade 1	“Pseudoplaques” = pleural based silicotic nodules, mild mosaic perfusion
5	R Gr 2 P	Rounded, well defined opacities, mainly P, Grade 2	Bronchiectasis left, artefacts left
6	R Gr 2 Q	Rounded, well defined opacities, mainly Q, Grade 2	Large opacity due to silicosis, AX, calcified nodules, “Pseudoplaques”
7	Irr Gr 1	Inter- and intralobular opacities, Grade 1	Pleural thickening, visceral type, SC
8	Intralobular Gr 2	Intralobular opacities, Grade 2	Mainly intralobular, minimal interlobular opacities, localized honeycombing, mild subpleural emphysema
9	Irr Gr 2	Intra- and interlobular opacities, Grade 2	Pleural fibrosis (visceral type), very extensive, (= hyalinosi complicata); MP;
10	GGO Gr 1	Ground Glass Opacity Grade 1, focal distribution	Thickening of pleura and interlobar fissure
11	GGO Gr 2	GGO Grade 2, patchy distribution	Honeycombing (HC) Grade 2 posteriorly, PB, centrilobular opacities, pleural thickening
12	GGO Gr 3	GGO Grade 3, wide spread distribution	HC Grade 2-3, pleural thickening due to fibrosis

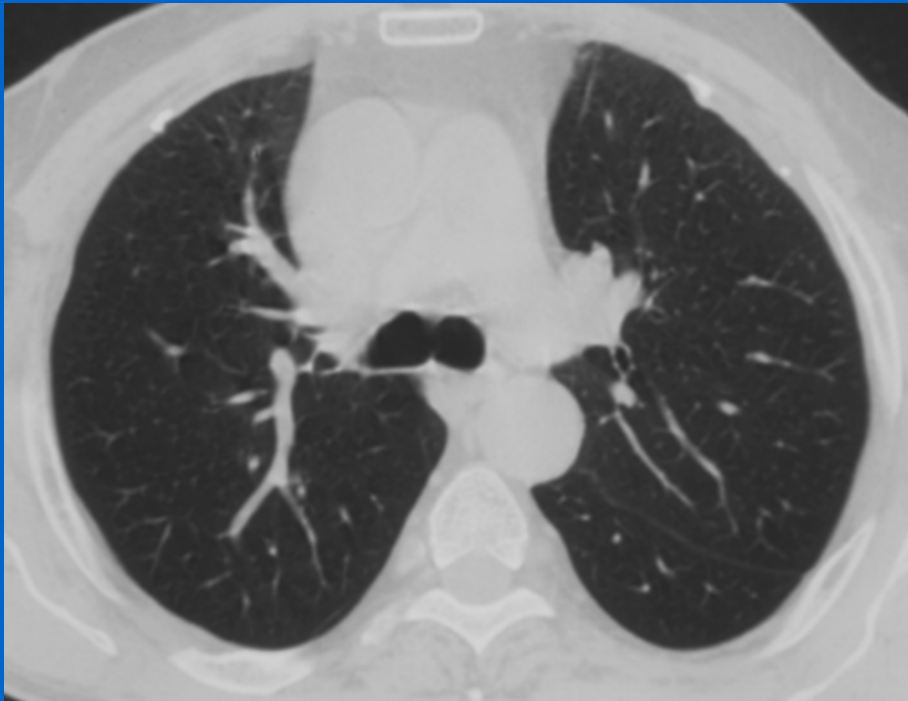
# CT-Klassifikation der Pneumokoniosen: R 0/Irr 0

1 R0/IrrGr0	2 R0/IrrGr0	3 R0/IrrGr0
4 R Gr1Q	5 R Gr2P	6 R Gr2Q
7 Irr Gr1	8 Intralobula Gr2	9 Irr Gr2
10 GGO Gr1 -48.0mm	11 GGO Gr2 -164.5mm	12 GGO Gr3 -164.5mm



# CT-Klassifikation der Pneumokoniosen: R 0/Irr 0

1	2	3
R0/IrrGr0	R0/IrrGr0	R0/IrrGr0
4	5	6
R Gr1Q	R Gr2P	R Gr2Q
7	8	9
Irr Gr1	Intralobula Gr2	Irr Gr2
10	11	12
GGO Gr1 -48.0mm	GGO Gr2 -164.5mm	GGO Gr3 -164.5mm



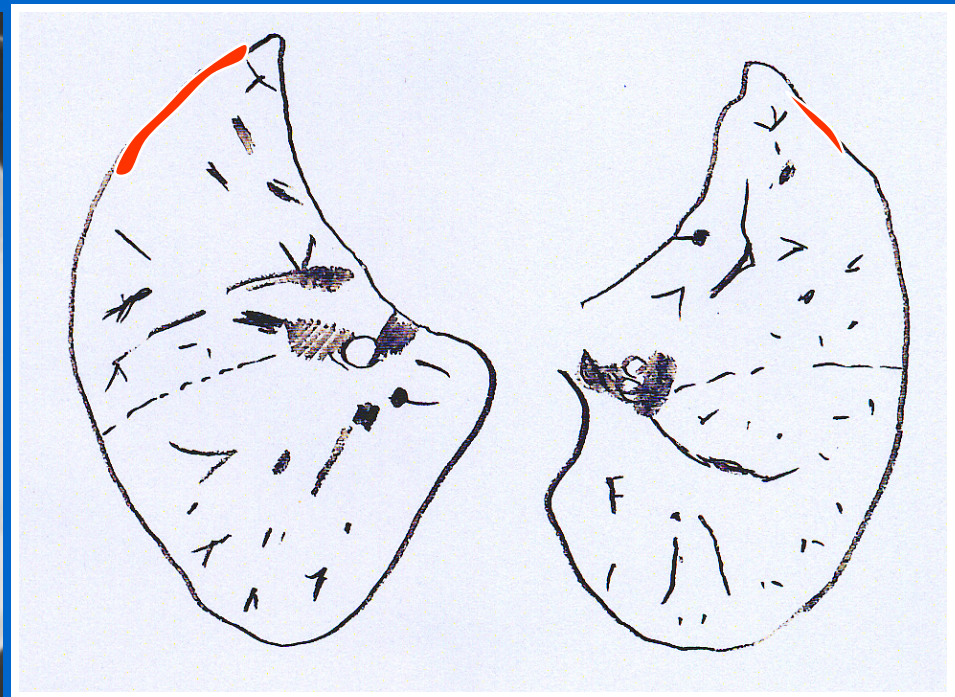
Calcified plaques





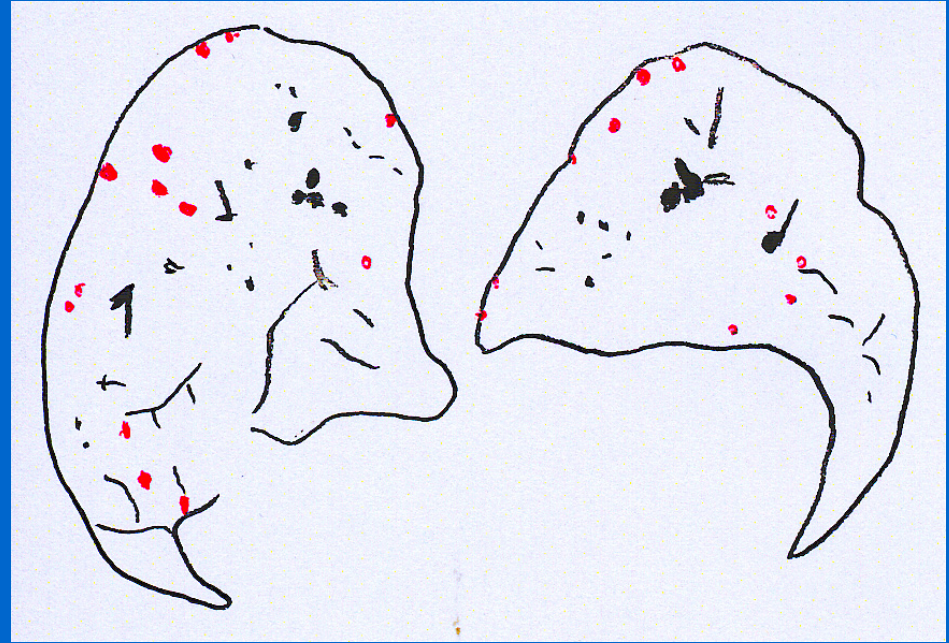
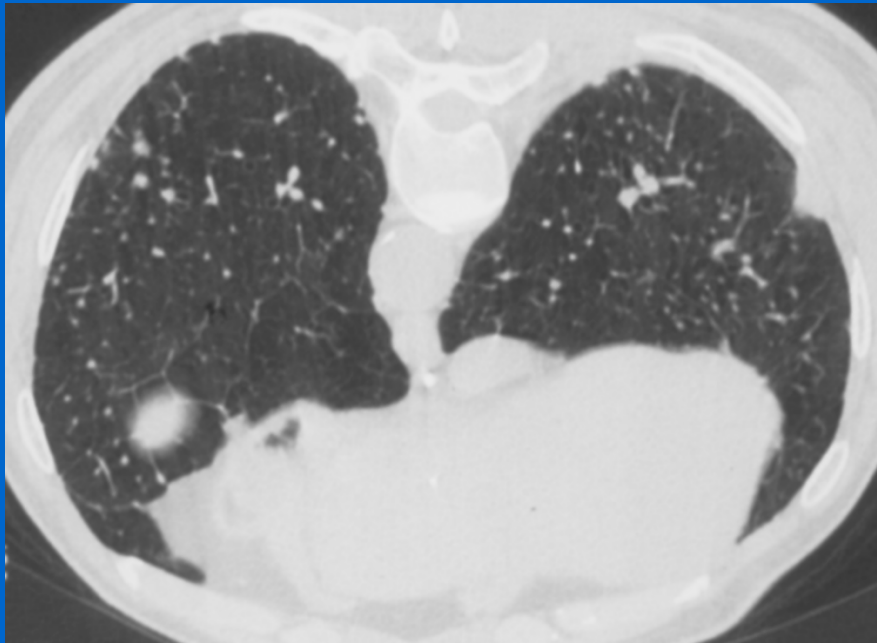
# CT-Klassifikation der Pneumokoniosen: R 0/Irr 0

1 R0/IrrGr0	2 R0/IrrGr0	3 R0/IrrGr0
4 R Gr1Q	5 R Gr2P	6 R Gr2Q
7 Irr Gr1	8 Intralobula Gr2	9 Irr Gr2
10 GGO Gr1 -48.0mm	11 GGO Gr2 -164.5mm	12 GGO Gr3 -164.5mm



# CT-Klassifikation der Pneumokoniosen: R Gr 1 Q

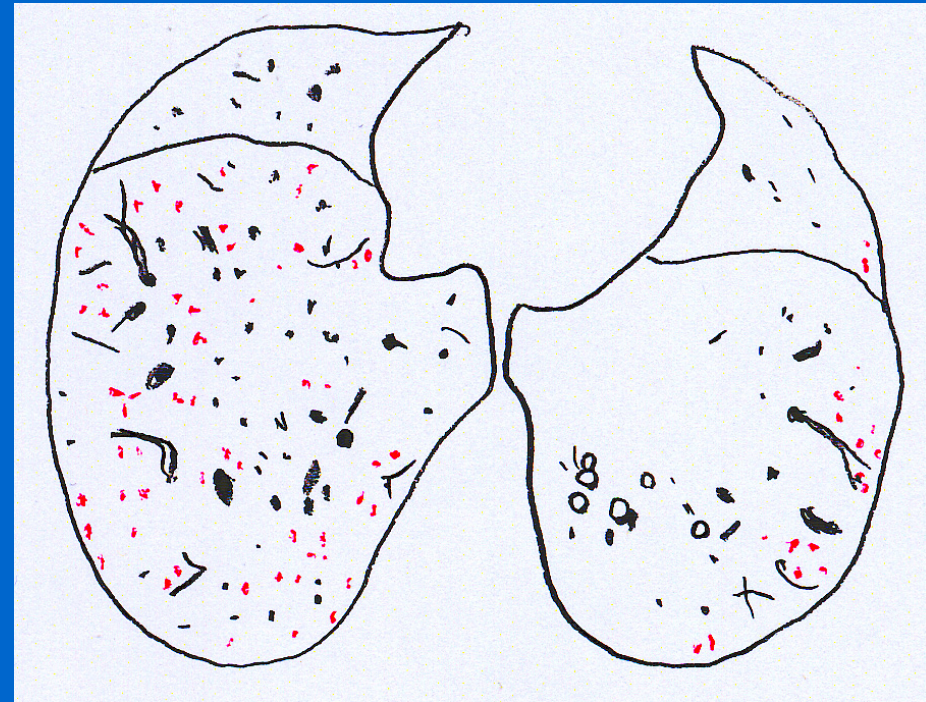
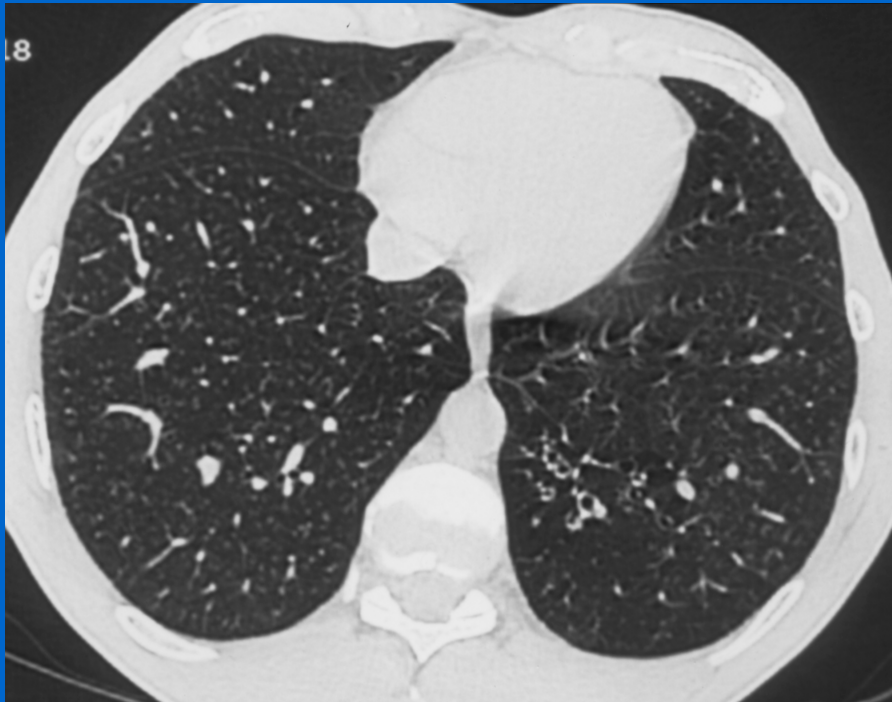
1	2	3
R0/IrrGr0	R0/IrrGr0	R0/IrrGr0
4	5	6
R Gr1Q	R Gr2P	R Gr2Q
7	8	9
Irr Gr1	Intralobulär Gr2	Irr Gr2
10	11	12
GGO Gr1 -48.0mm	GGO Gr2 -164.5mm	GGO Gr3 -164.5mm





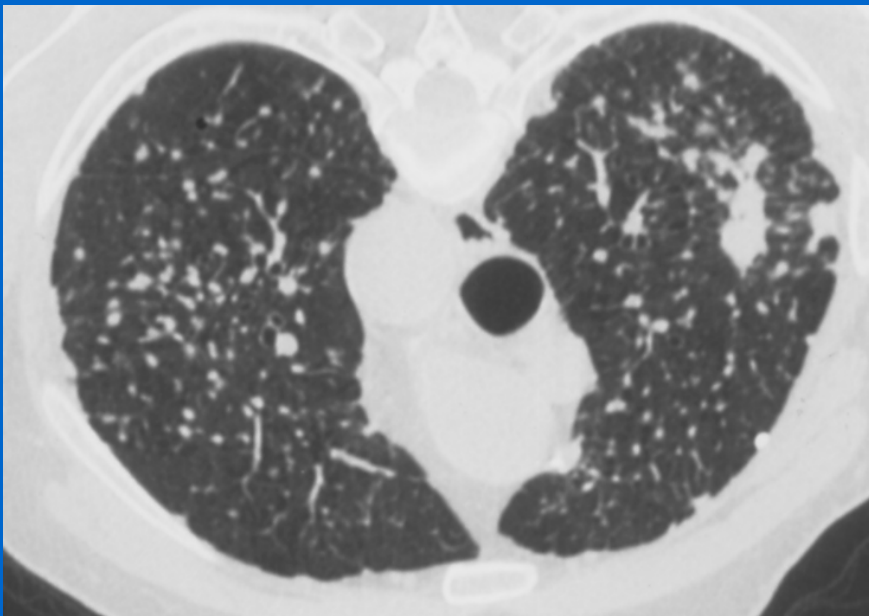
# CT-Klassifikation der Pneumokoniosen: R Gr 2 P

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R Gr1Q	R Gr2P	R Gr2Q	
Irr Gr1	Intralobulär Gr2	Irr Gr2	
GGO Gr1 -48.0mm	GGO Gr2 -164.5mm	GGO Gr3 -164.5mm	



# CT-Klassifikation der Pneumokoniosen: R Gr 2 Q

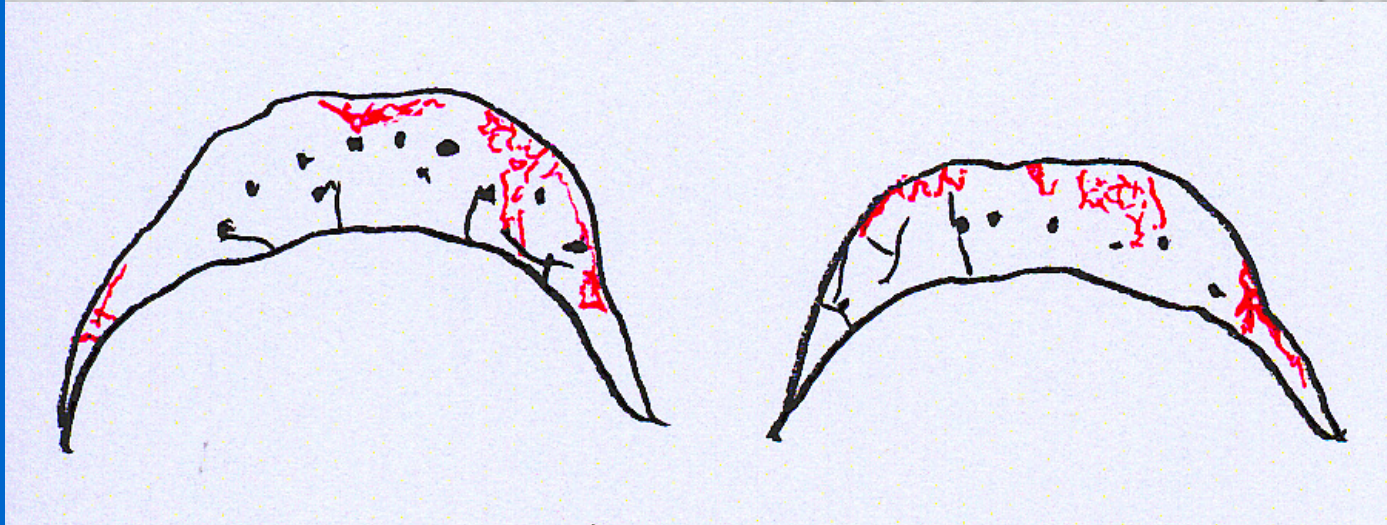
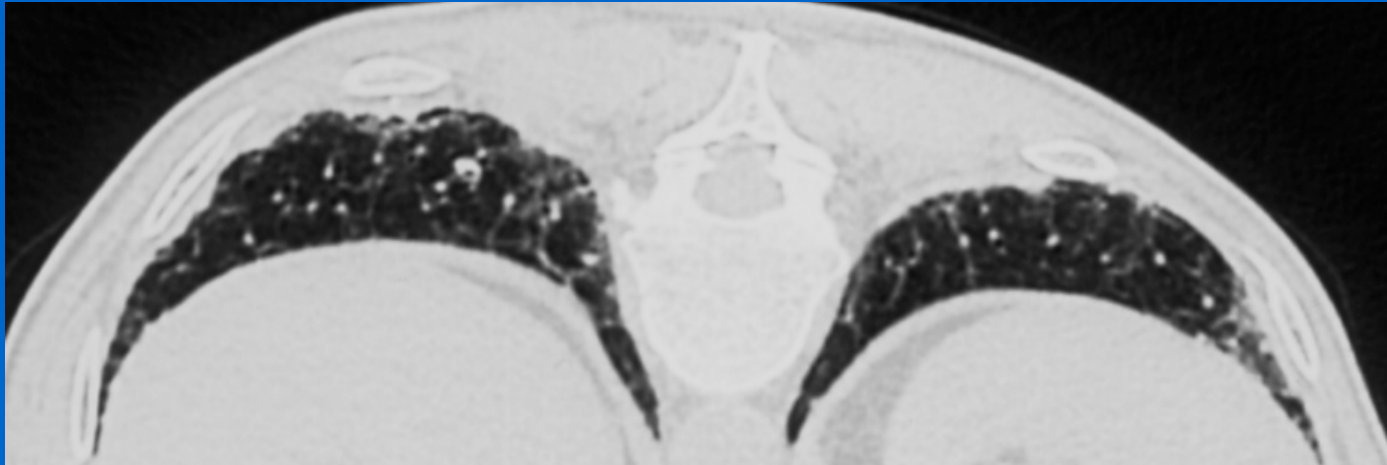
1	2	3
R0/IrrGr0	R0/IrrGr0	R0/IrrGr0
4	5	6
R Gr1Q	R Gr2P	R Gr2Q
7	8	9
Irr Gr1	Intralobulär Gr2	Irr Gr2
10	11	12
GGO Gr1 -48.0mm	GGO Gr2 -164.5mm	GGO Gr3 -164.5mm





# CT-Klassifikation der Pneumokoniosen: Irr Gr1

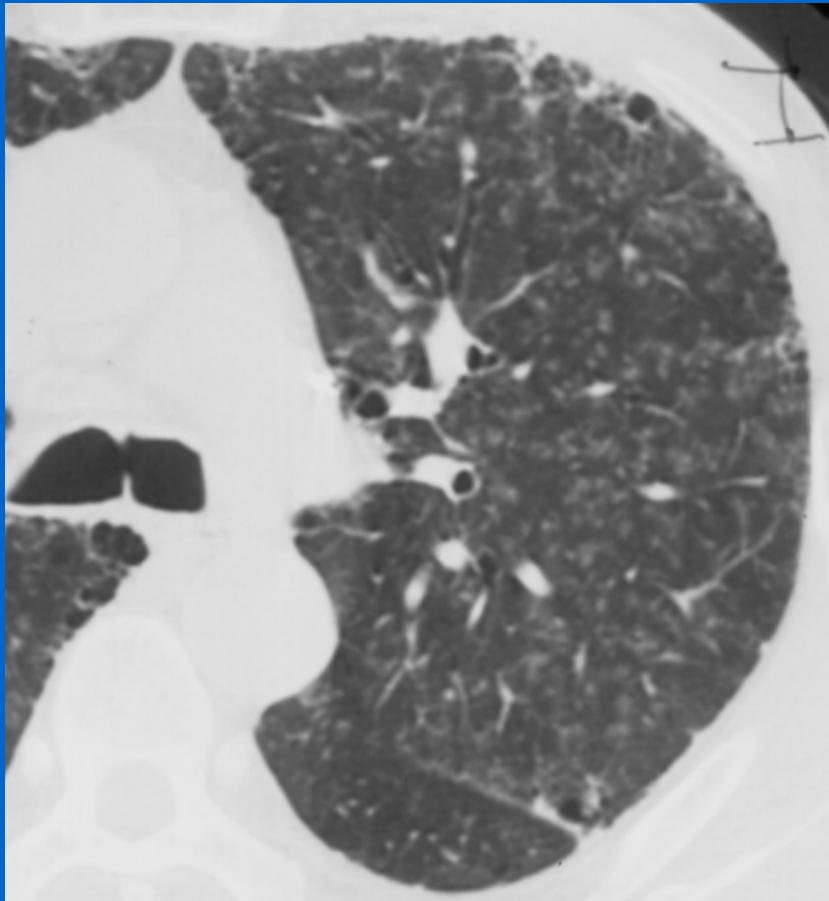
1	2	3
R0/IrrGr0	R0/IrrGr0	R0/IrrGr0
4	5	6
R Gr1Q	R Gr2P	R Gr2Q
7	8	9
Irr Gr1	Intralobula Gr2	Irr Gr2
10	11	12
GGO Gr1 -48.0mm	GGO Gr2 -164.5mm	GGO Gr3 -164.5mm





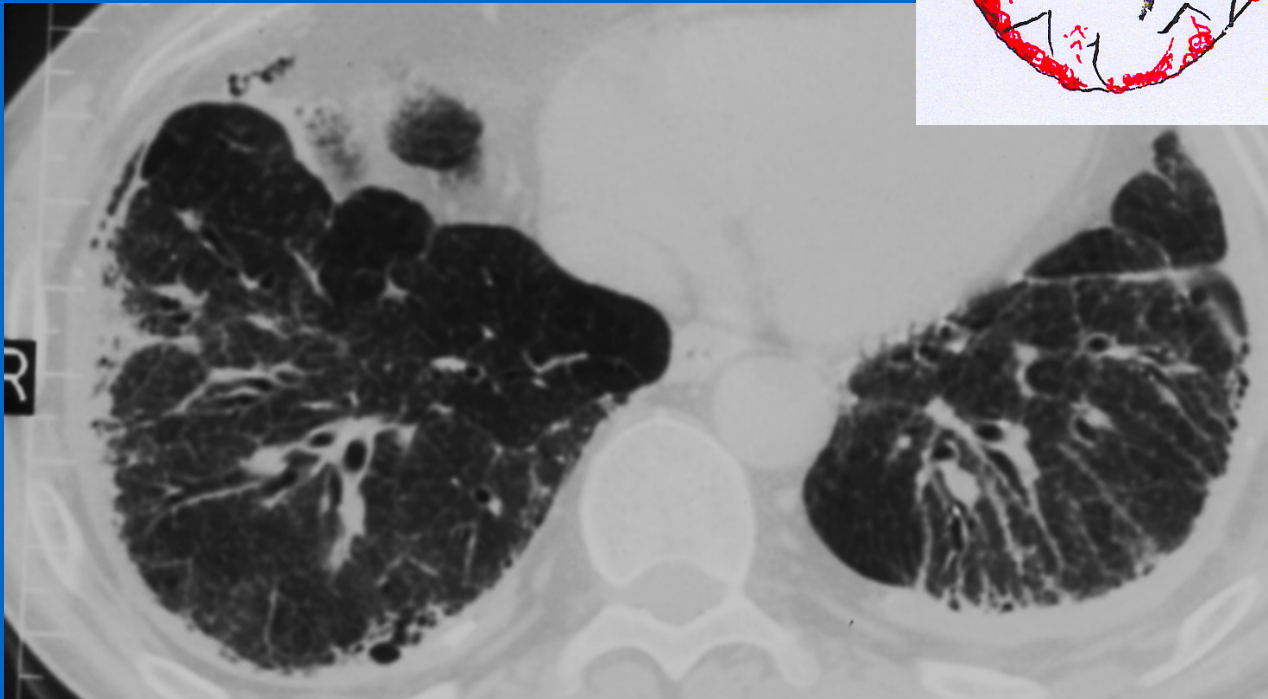
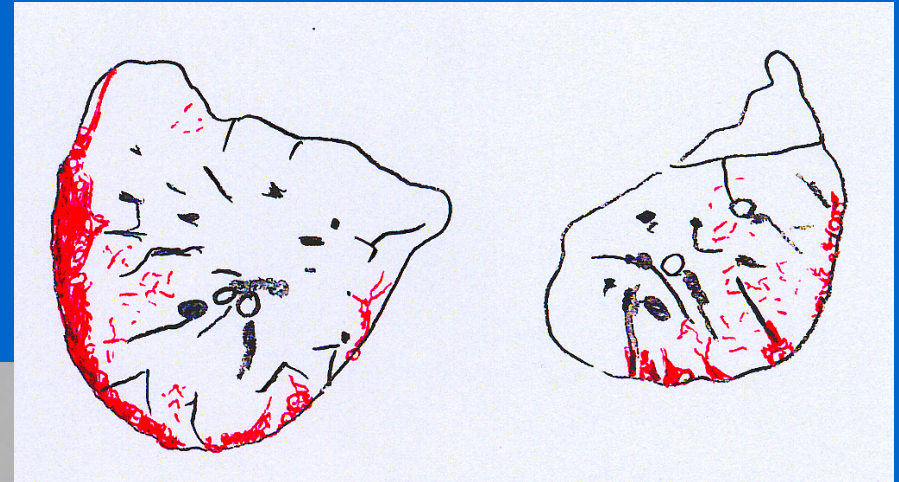
# CT-Klassifikation der Pneumokoniosen: Irr Gr2 (il)

R0/IrrGr0	1	2	3
R Gr1Q	4	5	6
Irr Gr1	7	8	9
		Intralobulär Gr2	
GGO Gr1 -48.0mm	10	11	12
		GGO Gr2 -164.5mm	GGO Gr3 -164.5mm



# CT-Klassifikation der Pneumokoniosen: Irr Gr2

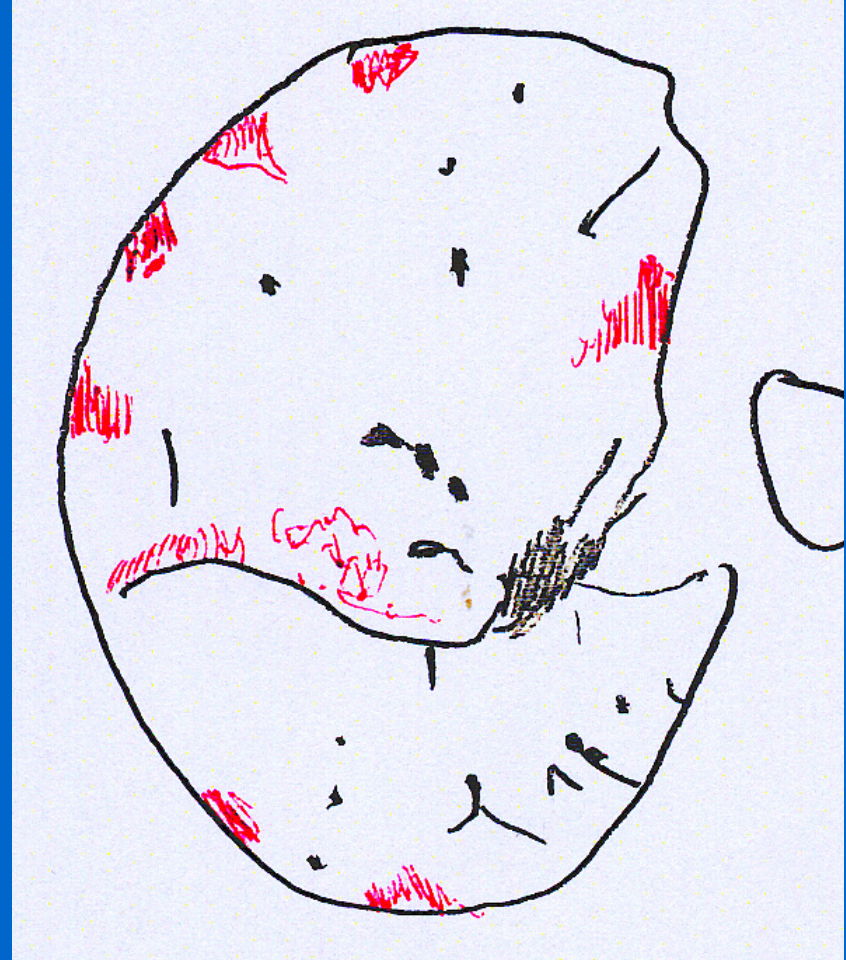
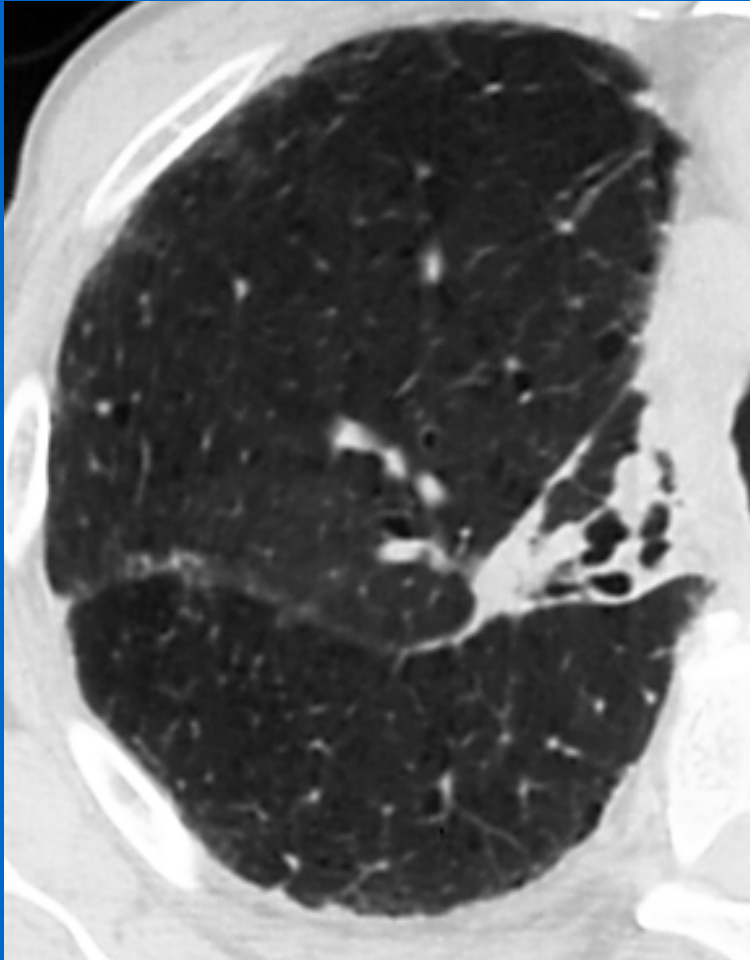
1	2	3
R0/IrrGr0	R0/IrrGr0	R0/IrrGr0
4	5	6
R Gr1Q	R Gr2P	R Gr2Q
7	8	9
Irr Gr1	Intralobul. Gr2	Irr Gr2
10	11	12
GGO Gr1 -48.0mm	GGO Gr2 -164.5mm	GGO Gr3 -164.5mm





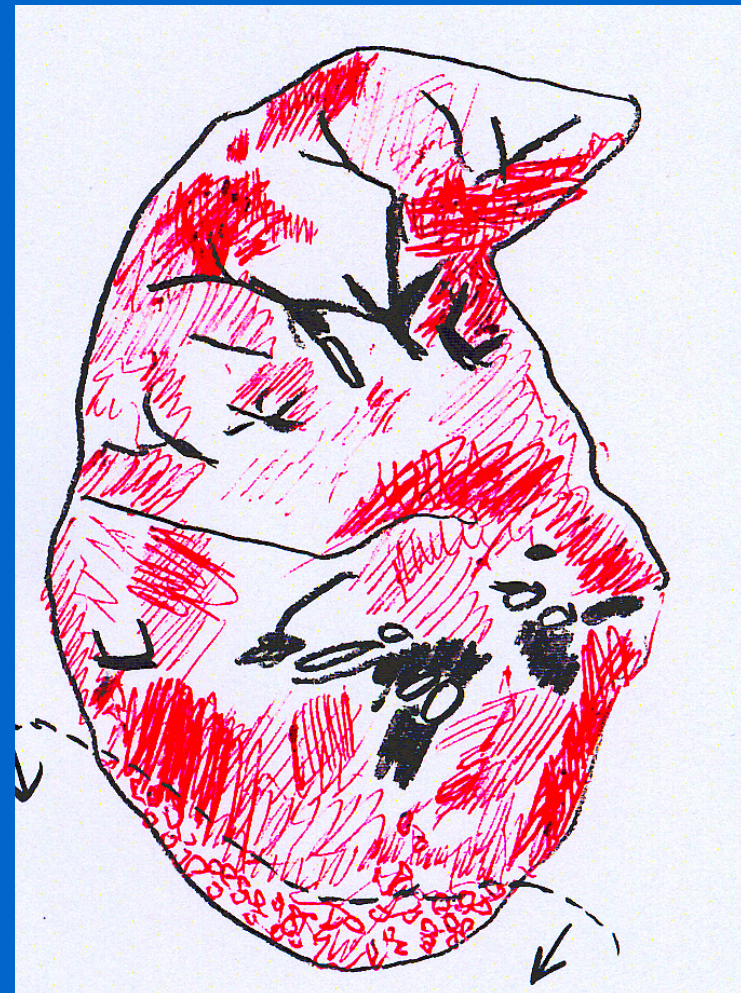
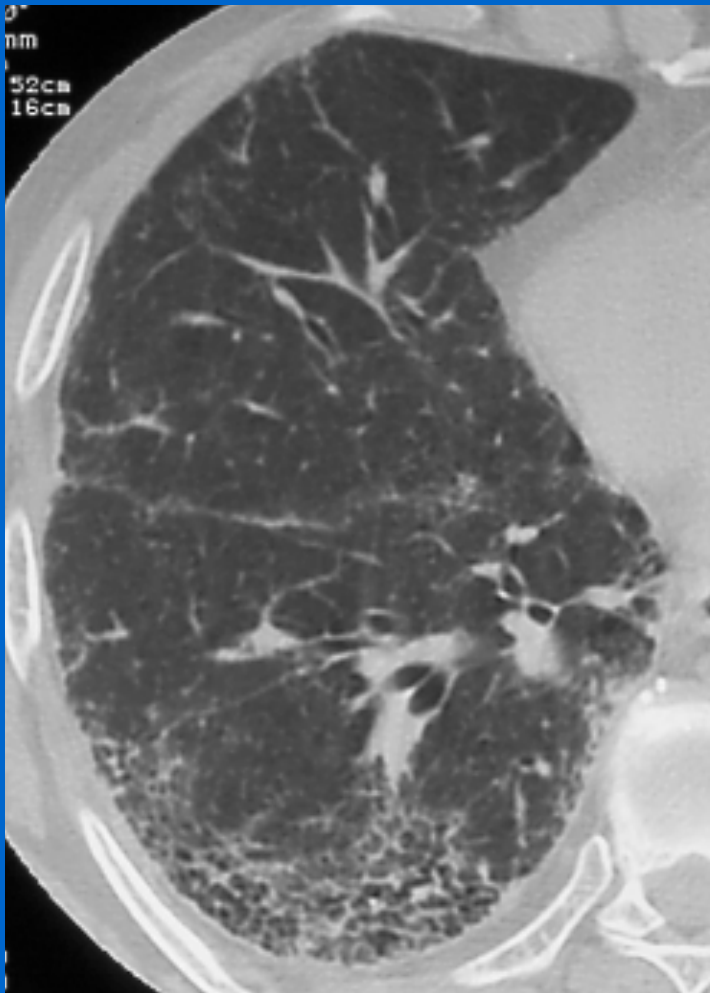
# CT-Klassifikation der Pneumokoniosen: GGO Gr1

1	2	3
R0/IrrGr0	R0/IrrGr0	R0/IrrGr0
4	5	6
R Gr1Q	R Gr2P	R Gr2Q
7	8	9
Irr Gr1	Intralobula Gr2	Irr Gr2
10	11	12
GGO Gr1 -48.0mm	GGO Gr2 -164.5mm	GGO Gr3 -164.5mm



# CT-Klassifikation der Pneumokoniosen: GGO Gr2

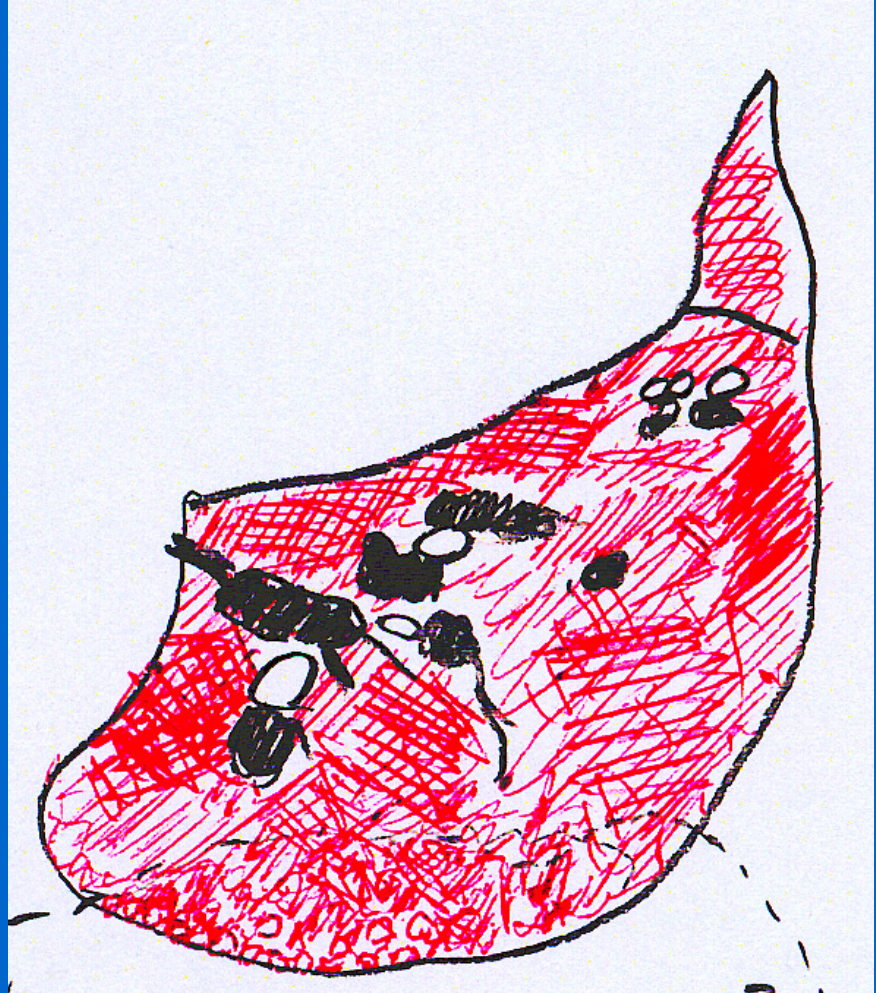
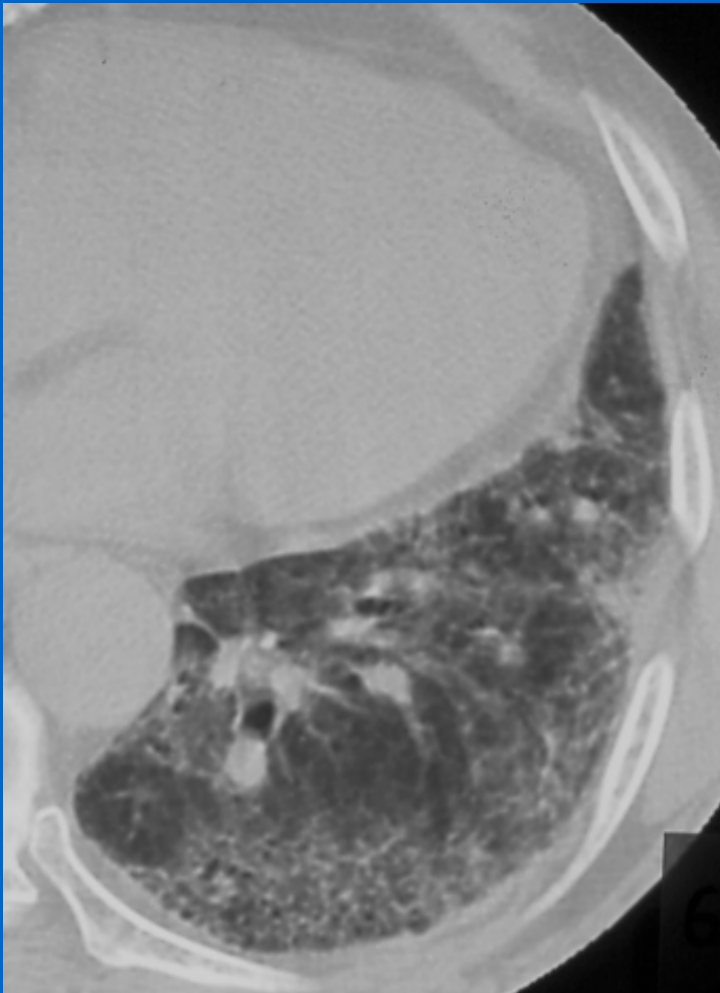
1	2	3
R0/IrrGr0	R0/IrrGr0	R0/IrrGr0
4	5	6
R Gr1Q	R Gr2P	R Gr2Q
7	8	9
Irr Gr1	Intralobula Gr2	Irr Gr2
10	11	12
GGO Gr1 -48.0mm	GGO Gr2 -164.5mm	GGO Gr3 -164.5mm





# CT-Klassifikation der Pneumokoniosen: GGO Gr3

1	2	3
R0/IrrGr0	R0/IrrGr0	R0/IrrGr0
4	5	6
R Gr1Q	R Gr2P	R Gr2Q
7	8	9
Irr Gr1	Intralobula Gr2	Irr Gr2
10	11	12
GGO Gr1 -48.0mm	GGO Gr2 -164.5mm	GGO Gr3 -164.5mm



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## II. HC, EM

Honeycombing  
Emphysema, Symbols

### Reference Films for CT Classification

#### II. Emphysema, symbols

1 HC Gr1 -100.0mm	2 HC Gr2	3 HC Gr3
4 Em Gr1	5 Em Gr2	6 Em Gr3
7	8 LO B	9
10	11	12

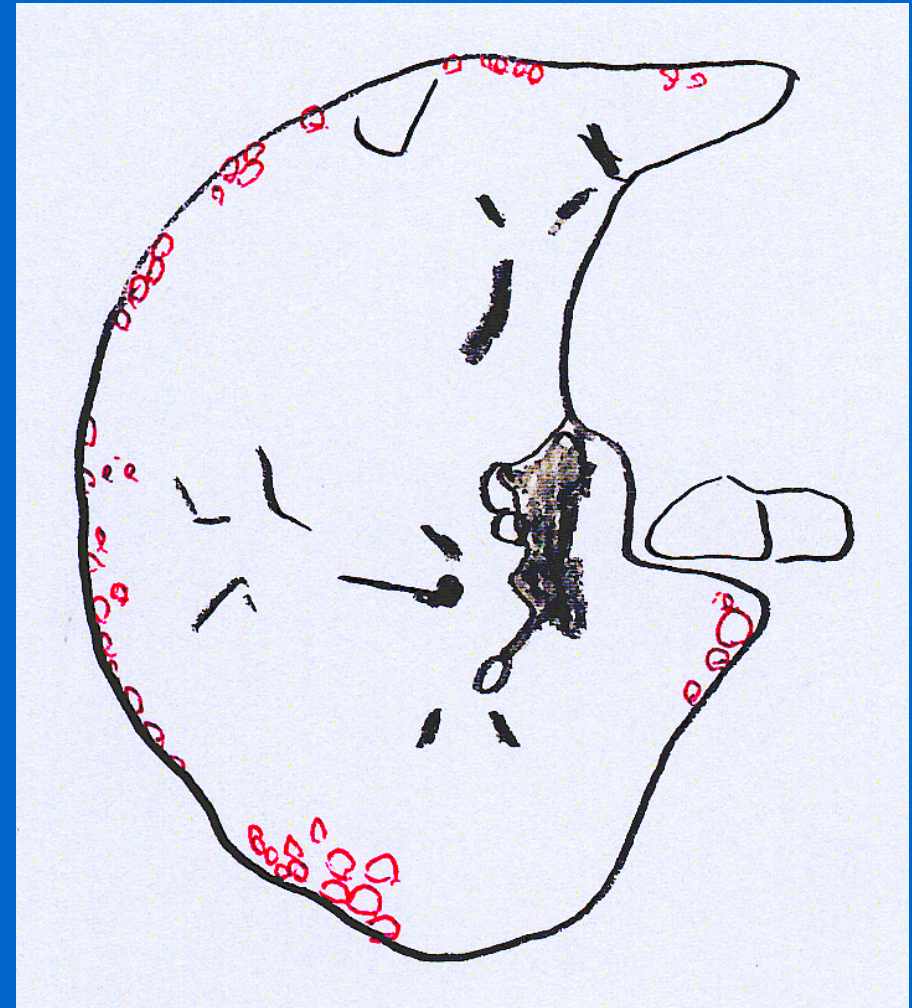
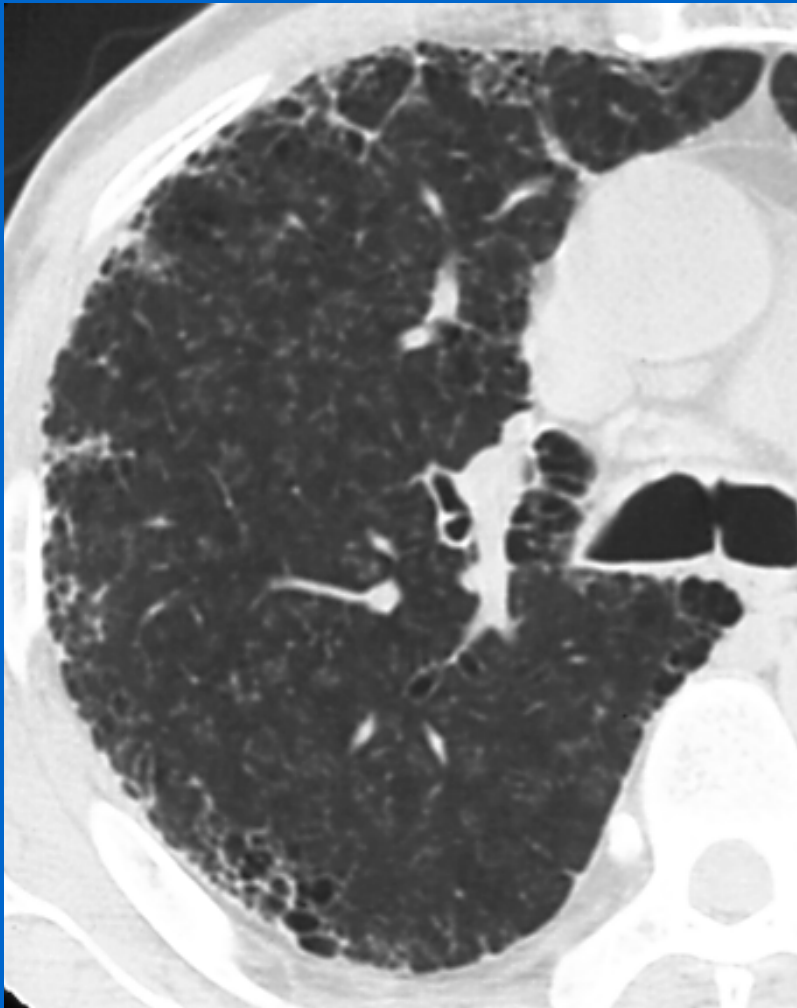
## II

1	HC Gr 1	Honeycombing Grade 1= mild = up to 10 mm in the subpleural region	Intralobular, dotlike opacities, mild subpleural emphysema
2	HC Gr 2	Honeycombing Grade 2 = moderate = >10 up to 30 mm in the subpleural space	Intralobular, dotlike opacities, focal distribution of Ground Glass Opacity (GGO), pleural thickening due to fibrosis
3	HC Gr 3	Honeycombing Grade 3 = severe = >30 mm up to whole area	focal distribution of Ground Glass Opacity (GGO), pleural thickening due to fibrosis,
4	EM Gr1	Subpleural and centrilobular emphysema Grade 1= mild = up to 15 % of the area	some intra- and interlobular opacities
5	EM Gr 2	Panlobular and subpleural emphysema, Grade 2 = moderate = between 15 to 30 %	pleural thickening due to mild fibrosis
6	EM Gr 3	Panlobular and subpleural emphysema, Grade 3 = severe = > 30 %	some intra- and interlobular opacities
7			
8	Large Opacity -B	Diameter of one or sum of more opacities larger than „A“, less than 1/2 of the area (2 quadrants) of the right side of the CT-slice at the carina	Coalescence (AX), Distortion (DI), paracicatricial emphysema, calcified lymph nodes, MP
9			
10			
11			
12			



# CT-Klassifikation der Pneumokoniosen: HC Gr1

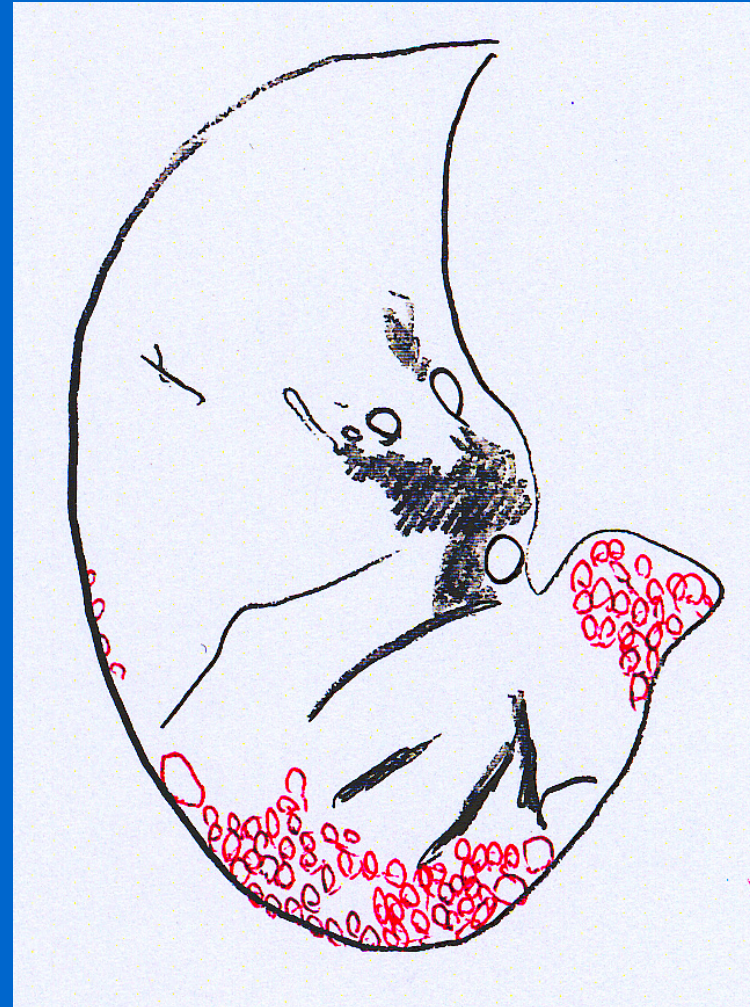
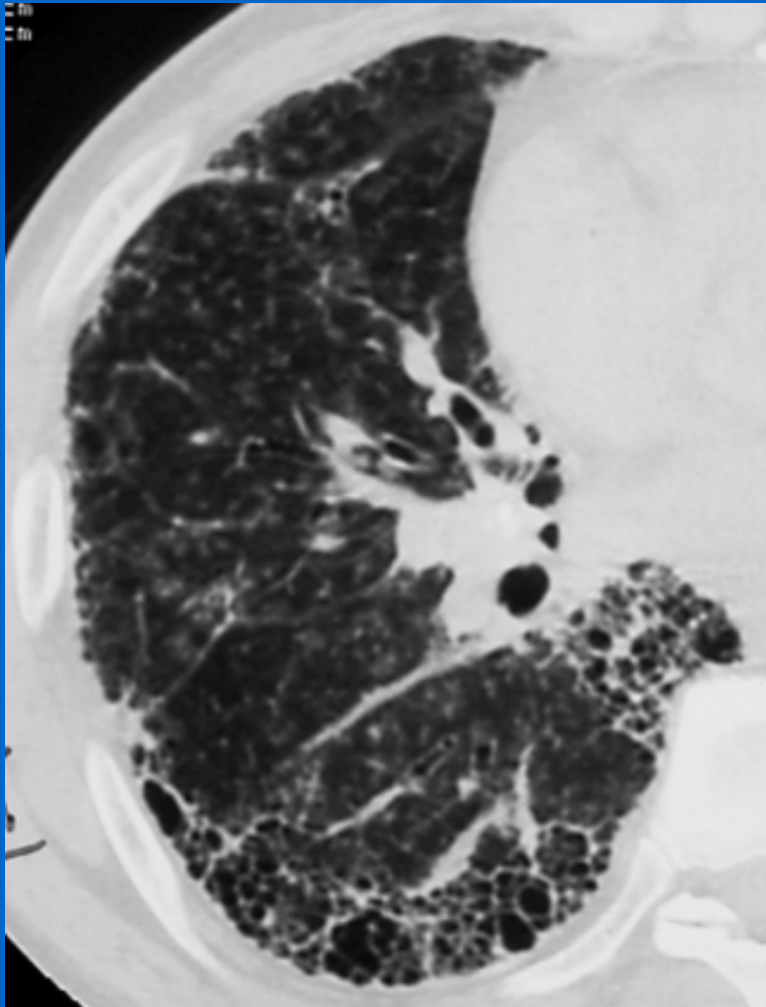
HC Gr1 -100,0mm	HC Gr2	HC Gr3
Em Gr1	Em Gr2	Em Gr3
	LOB	





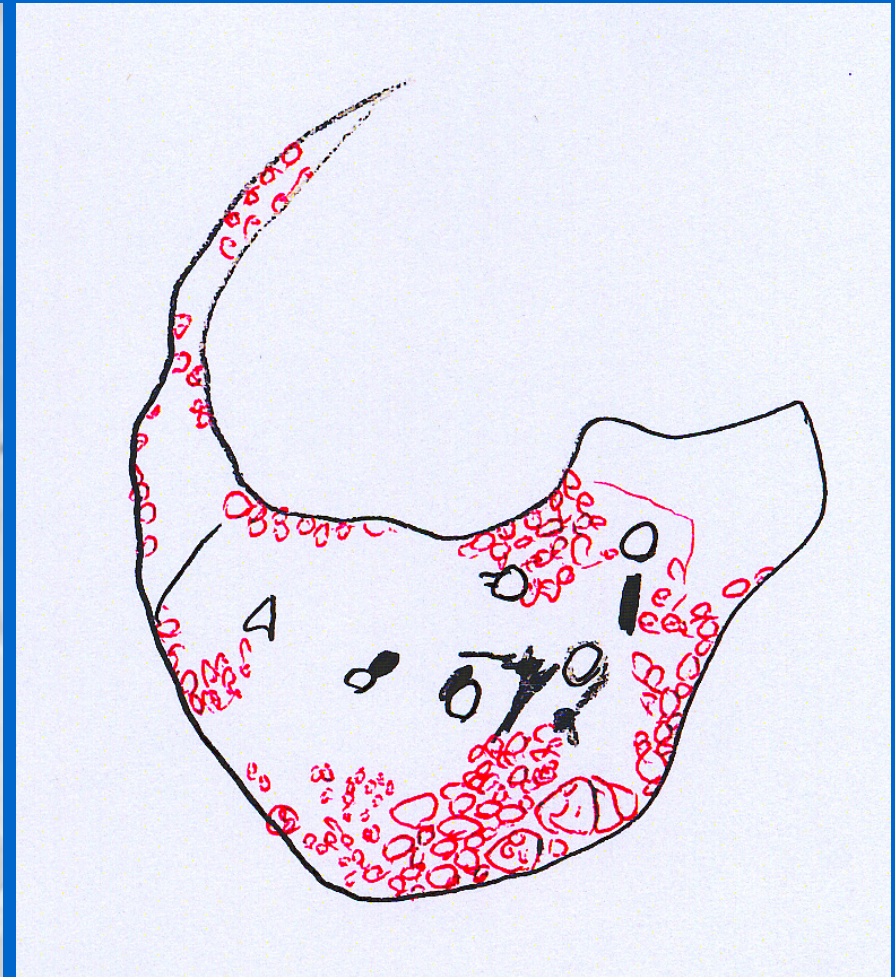
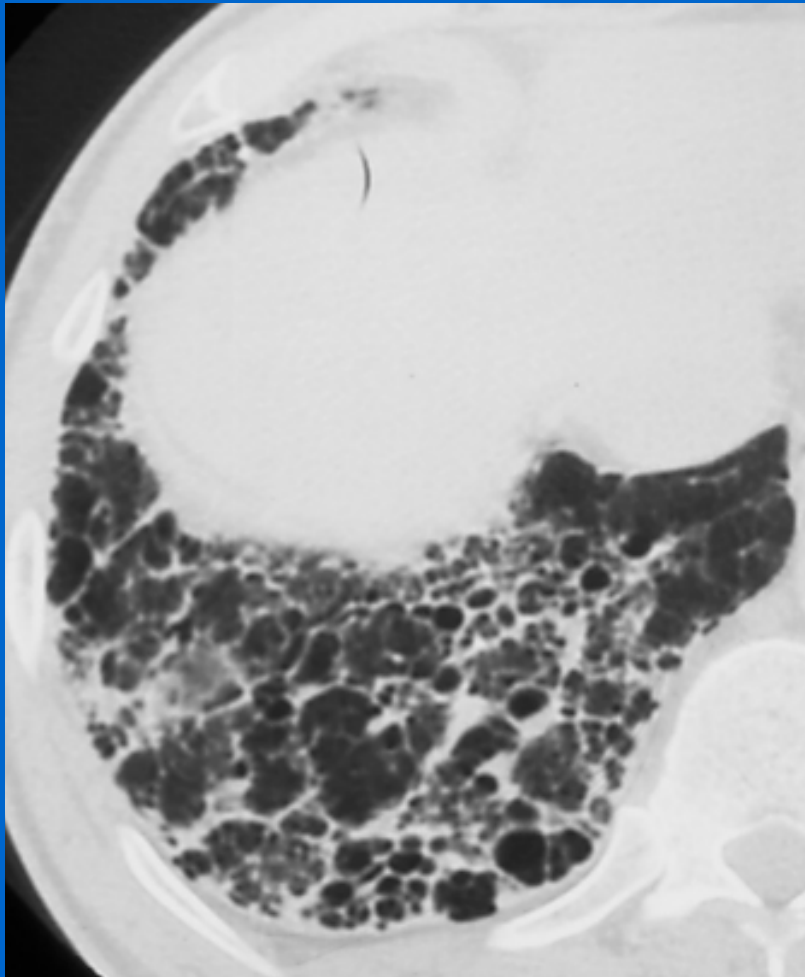
# CT-Klassifikation der Pneumokoniosen: HC Gr2

1 HC Gr1 -100.0mm	2 HC Gr2	3 HC Gr3
4 Em Gr1	5 Em Gr2	6 Em Gr3
7	8 LO B	9
10	11	12



# CT-Klassifikation der Pneumokoniosen: HC Gr3

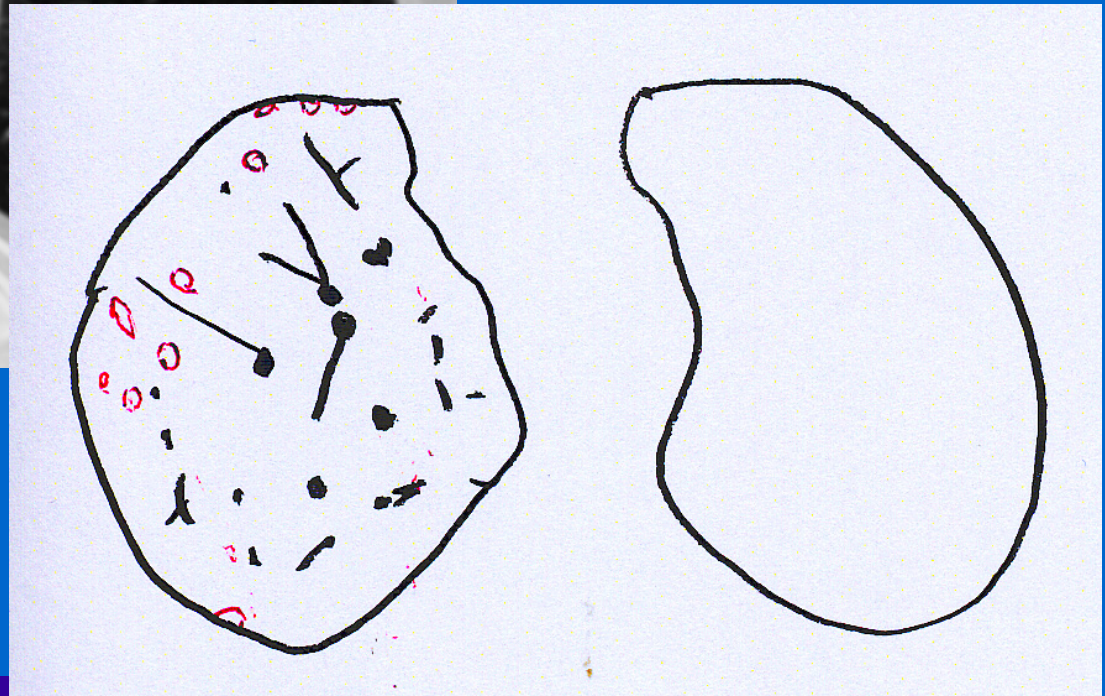
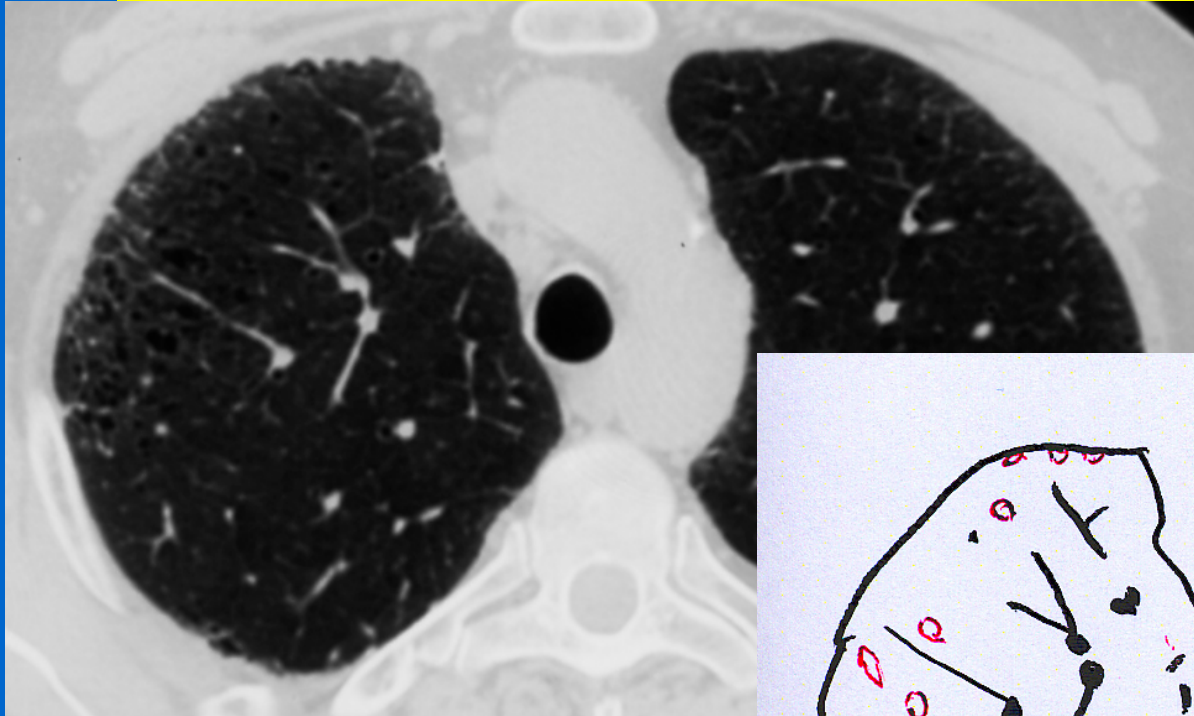
HC Gr1 -100.0mm	HC Gr2	HC Gr3
Em Gr1	Em Gr2	Em Gr3
7	LO B	8
10	11	12





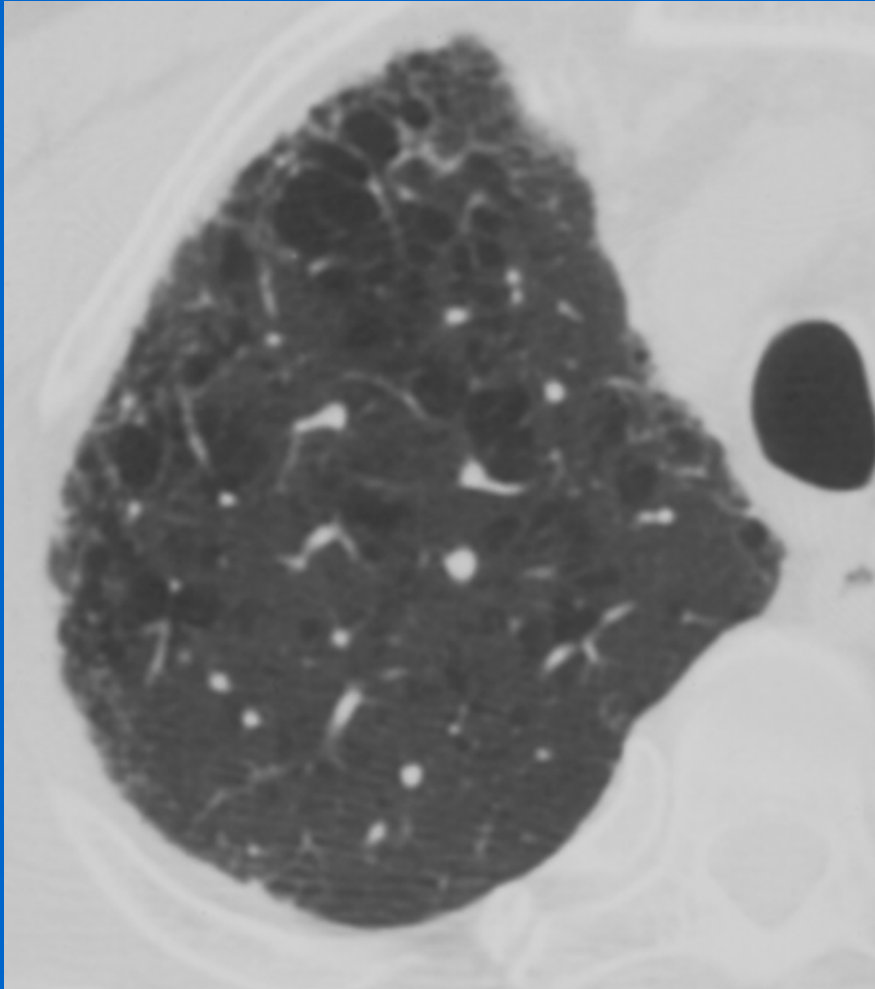
# CT-Klassifikation der Pneumokoniosen: Em Gr 1

HC Gr1 -100.0mm	HC Gr2	HC Gr3
Em Gr1	Em Gr2	Em Gr3
	LO B	



# CT-Klassifikation der Pneumokoniosen: Em Gr 2

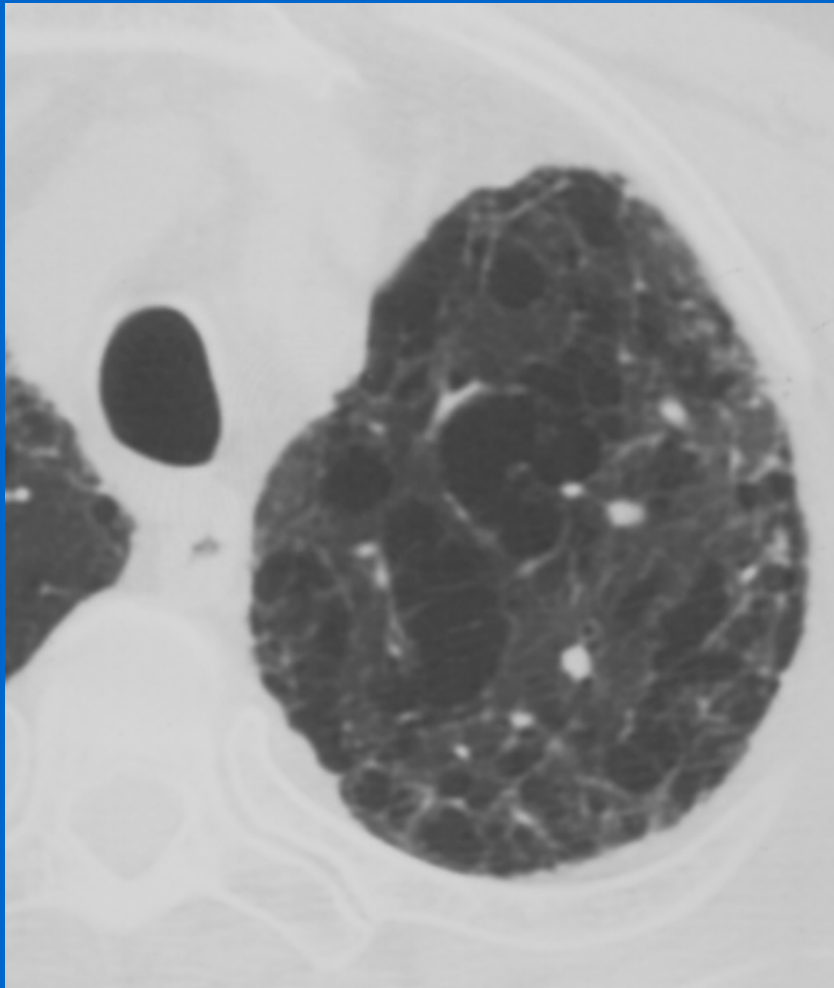
HC Gr1 -100.0mm	1	2	3
Em Gr1	4	5	6
	7	8	9
10	11	12	





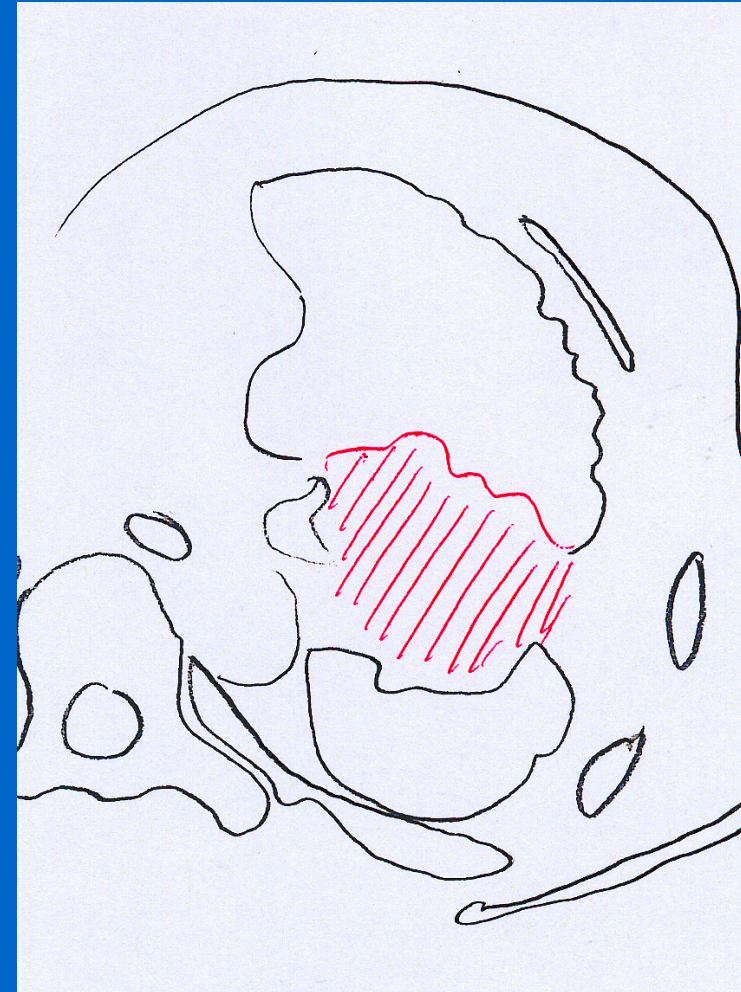
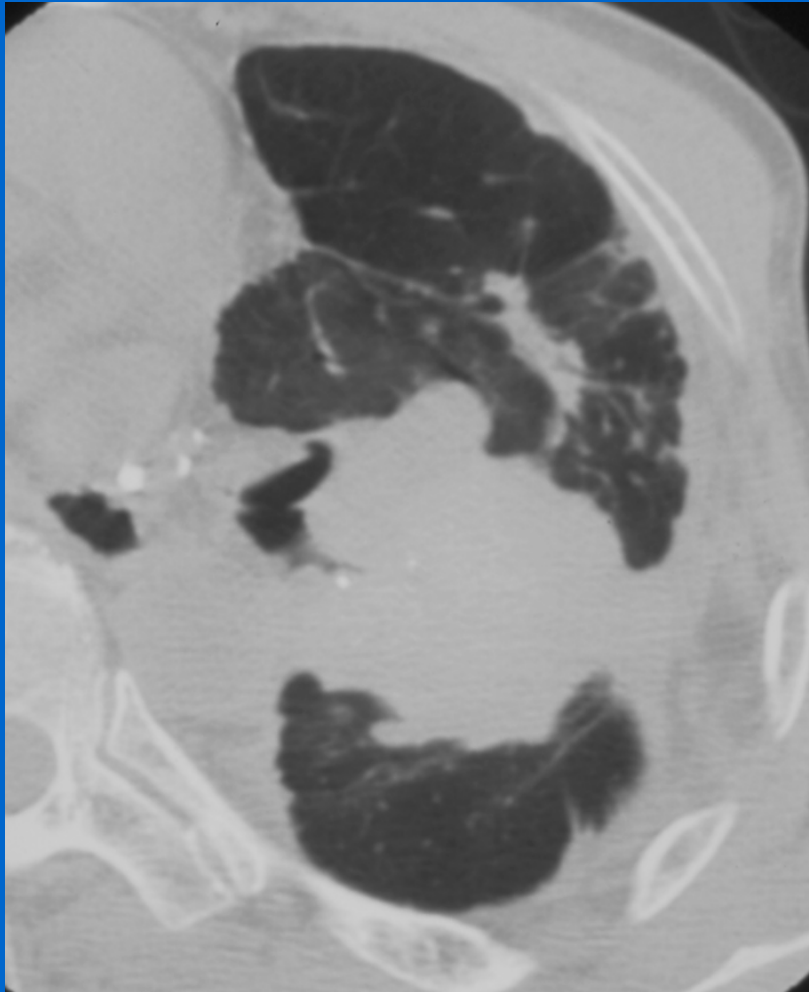
# CT-Klassifikation der Pneumokoniosen: Em Gr 3

HC Gr1 -100.0mm	HC Gr2	HC Gr3
Em Gr1	Em Gr2	Em Gr3
	LO B	



# CT-Klassifikation der Pneumokoniosen: LO B

HC Gr1 -100.0mm	HC Gr2	HC Gr3
Em Gr1	Em Gr2	Em Gr3
7	LO B	9
10	11	12



# III. Pleura

## Reference Films for CT Classification III. Pleural findings

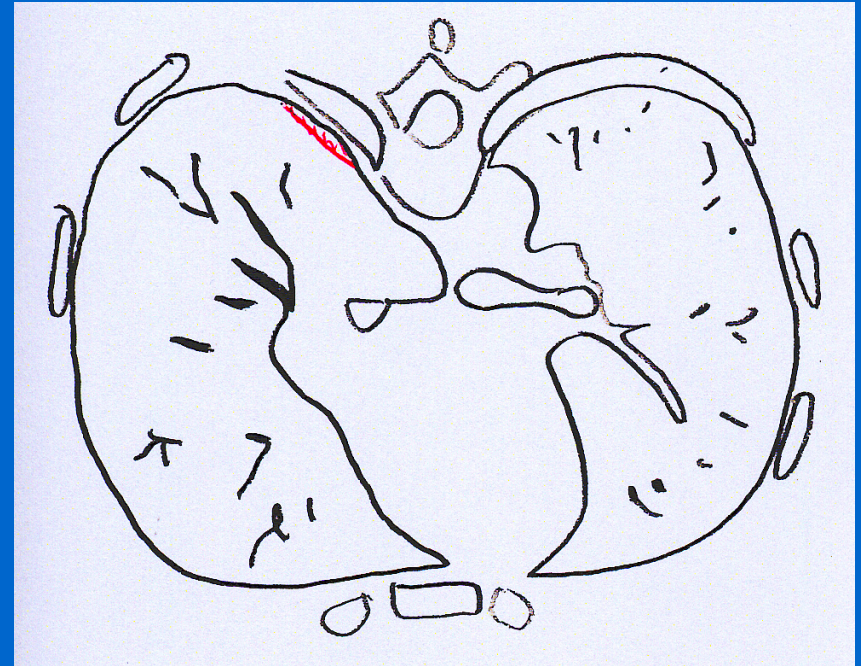
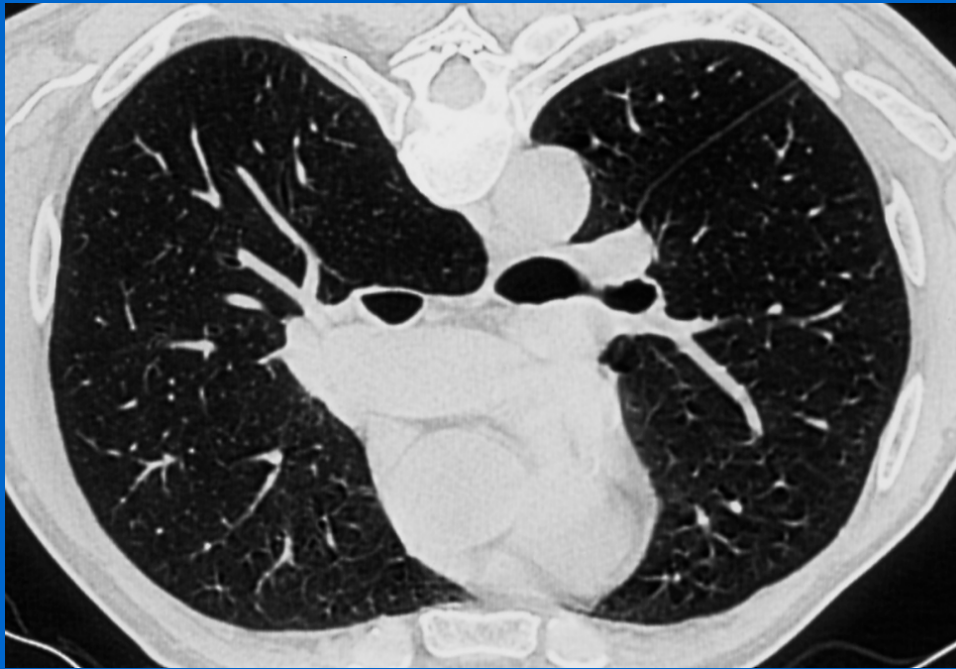
1 pariet A	2 pariet B	3 visc/pariet C
4 Pleural Abnormalities Ex2/Ex3	5 Pleural Abnormalities Ex2/Ex3	6 Pleural Abnormalities Ex2/Ex3
7 Pleural Abnormalities Ex3/Ex3	8 Pleural Abnormalities Ex3/Ex3	9 Pleural Abnormalities Ex3/Ex3
10	11	12

<b>1</b>	<b>Hyaline Plaque, parietal type</b>	<b>Extent 1, right side, Width “a”, &lt; 5 mm</b>	<b>None</b>
<b>2</b>	<b>Hyaline Plaques, parietal type</b>	<b>Extent 1, right and left side, Width “b”, &gt; 5 mm</b>	<b>No parenchymal reactions</b>
<b>3</b>	<b>Hyaline Plaques, parietal and visceral type</b>	<b>Hyaline plaques with calcification and parenchymal reaction Extent 2, right side, Width “c” Extent 3, left side, Width “c”</b>	<b>PB in combination with visceral type of pleural abnormality, calcification both sides at the wall (W)</b>
<b>4-6</b>	<b>Pleural abnormalities, Extent</b>	<b>Film 4 – R 1/c, L 1/c par.type Film 5 – R 2/c visc.type, L 2/c par. Film 6 – R 2/c v.+ p.t. L 3/c v.+ p.t.</b>	<b>PB, parietal and visceral type, calcification (W), see text</b>
<b>7-9</b>	<b>Pleural abnormalities, Extent</b>	<b>Film 7 – R 1/a v. + p.t. L 1/b p.t. Film 8 – R 2/b p.t. L 1/b v. + p.t. Film 9 - R 1/c p.t. L 2/c p.t</b>	<b>PB, parietal and visceral type, calcification (W), see text. # 8 – interlobar plaque?</b>
<b>10</b>			
<b>11</b>			
<b>12</b>			



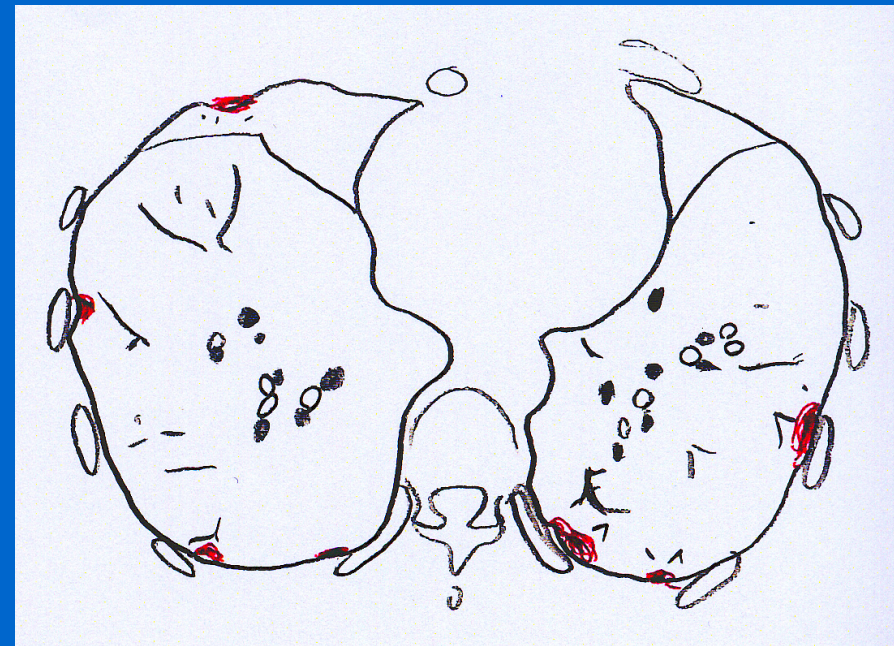
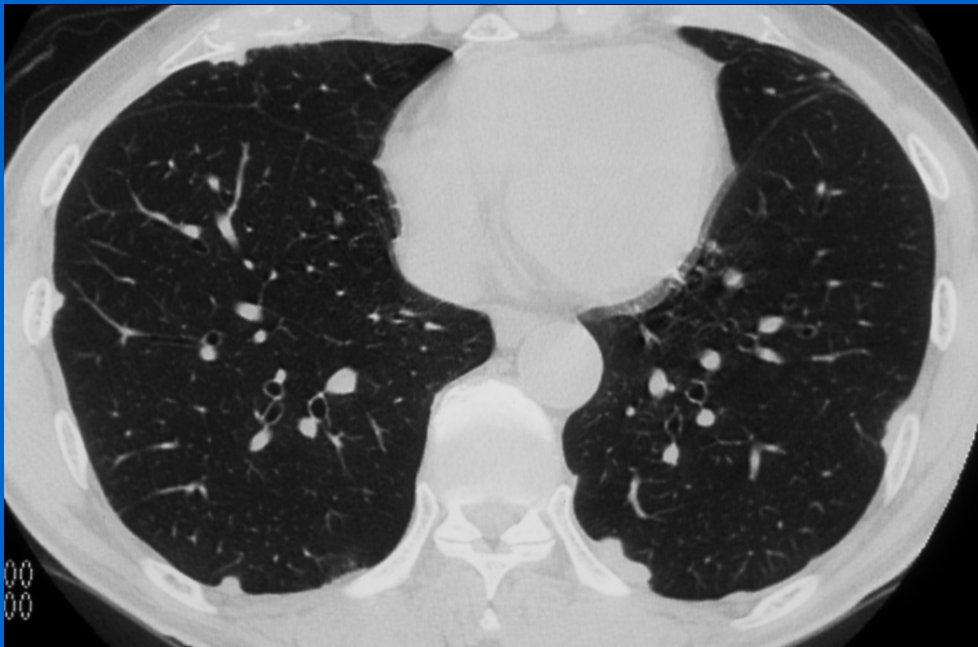
# CT-Klassifikation der Pneumokoniosen: Pleura - parietal type, width a

pariet A	1	pariet B	2	visc/pariet C	3
4		5		6	
Pleural Abnormalities Ex2/Ex3					
7		8		9	
Pleural Abnormalities Ex3/Ex3					
10		11		12	



# CT-Klassifikation der Pneumokoniosen: Pleura - parietal type, width b

pariet A	1	2	3
	pariet B	visc/pariet C	
4	5	6	
Pleural Abnormalities Ex2/Ex3			
7	8	9	
Pleural Abnormalities Ex3/Ex3			
10	11	12	

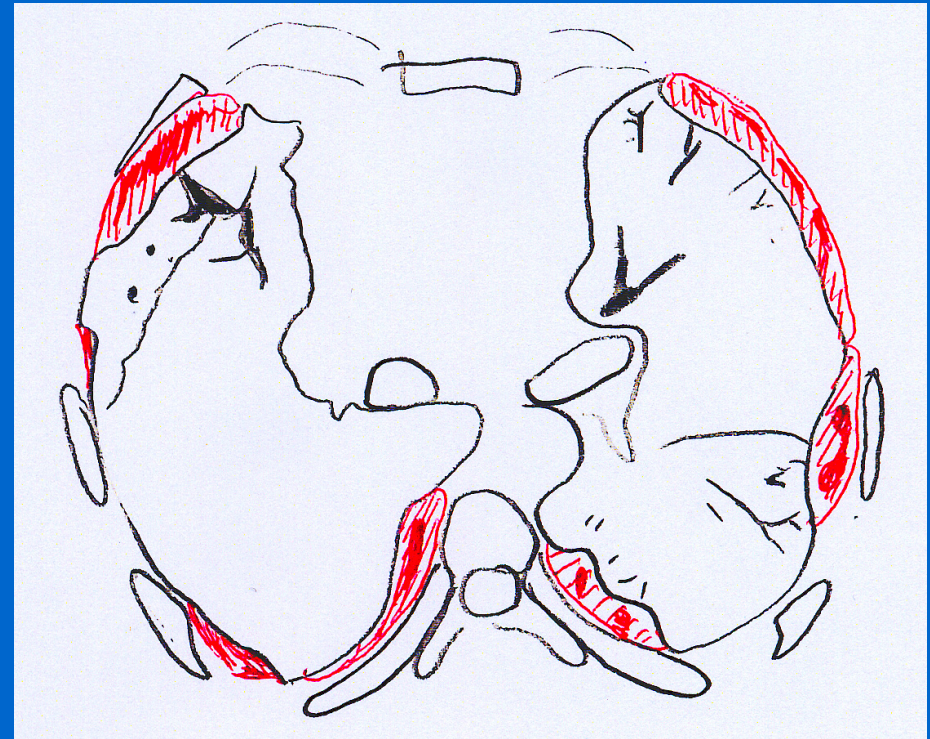
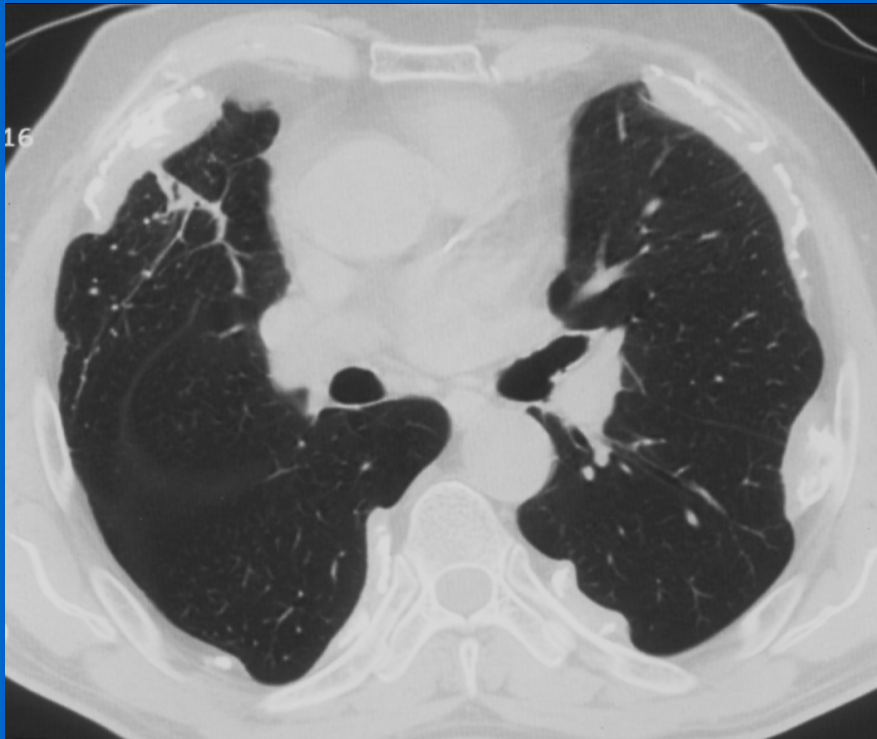




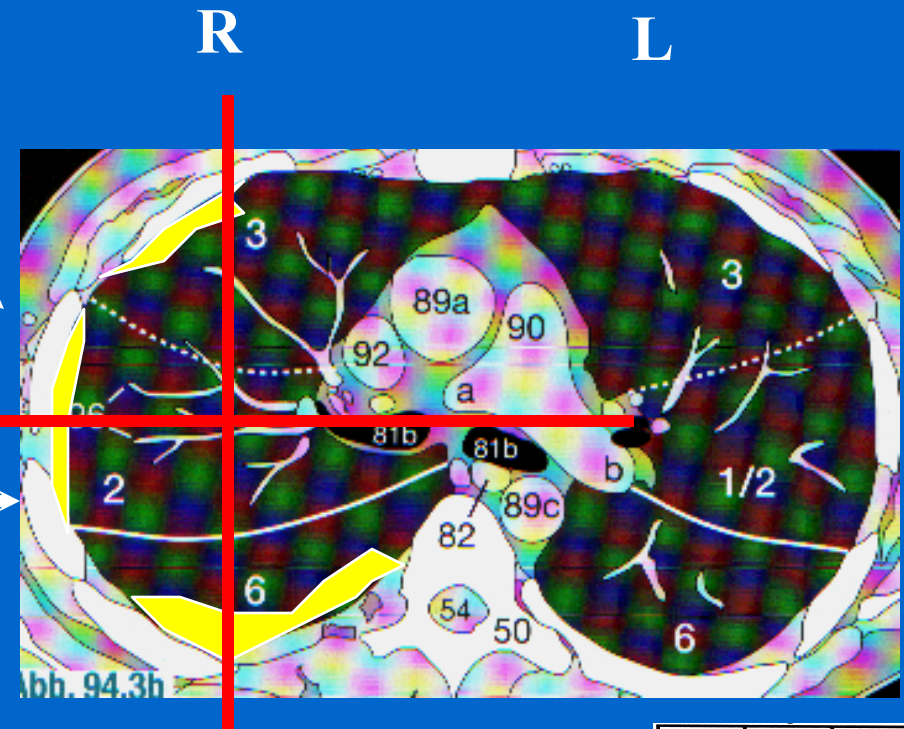
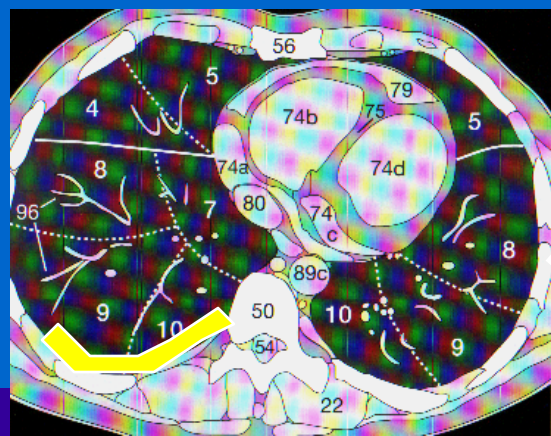
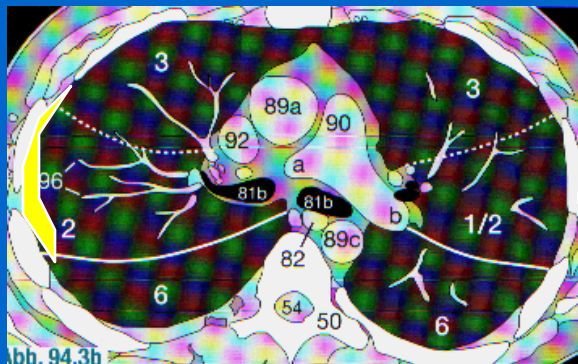
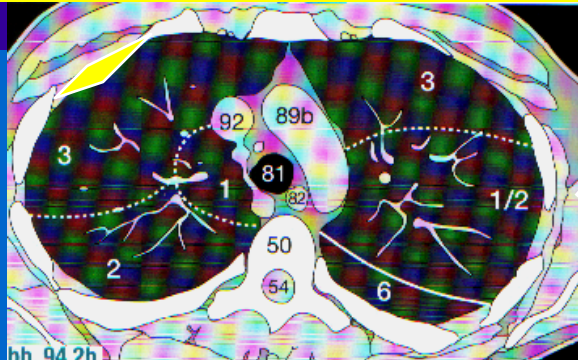
# CT-Klassifikation der Pneumokoniosen:

## Pleura - parietal and visceral type, width c

pariet A	1	pariet B	2	visc/pariet C	3
4		5		6	
Pleural Abnormalities Ex2/Ex3					
7		8		9	
Pleural Abnormalities Ex3/Ex3					
10		11		12	



# CT-Klassifikation der Pneumokoniosen



Angabe für jede Seite:

1 =  $< 90^\circ$  ( $< 1/4$ )

2 =  $90 - 180^\circ$  ( $1/4 - 1/2$ )

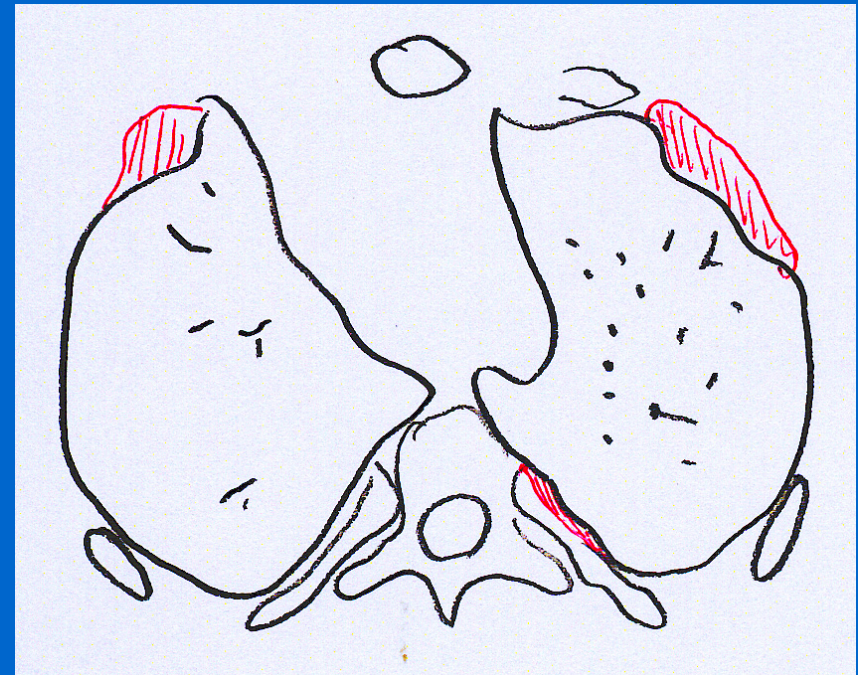
3 =  $> 180^\circ$  ( $> 1/2$ )

pariet A	1	pariet B	2	visc/pariet C	3
	4		5		6
Pleural Abnormalities Ex2/Ex3					
	7		8		9
Pleural Abnormalities Ex3/Ex3					
	10		11		12



# CT-Klassifikation der Pneumokoniosen: Pleura I

pariet A	1	pariet B	2	visc/pariet C	3
	4		5		6
Pleural Abnormalities Ex2/Ex3					
	7		8		9
Pleural Abnormalities Ex3/Ex3					
	10		11		12



# CT-Klassifikation der Pneumokoniosen: Pleura II

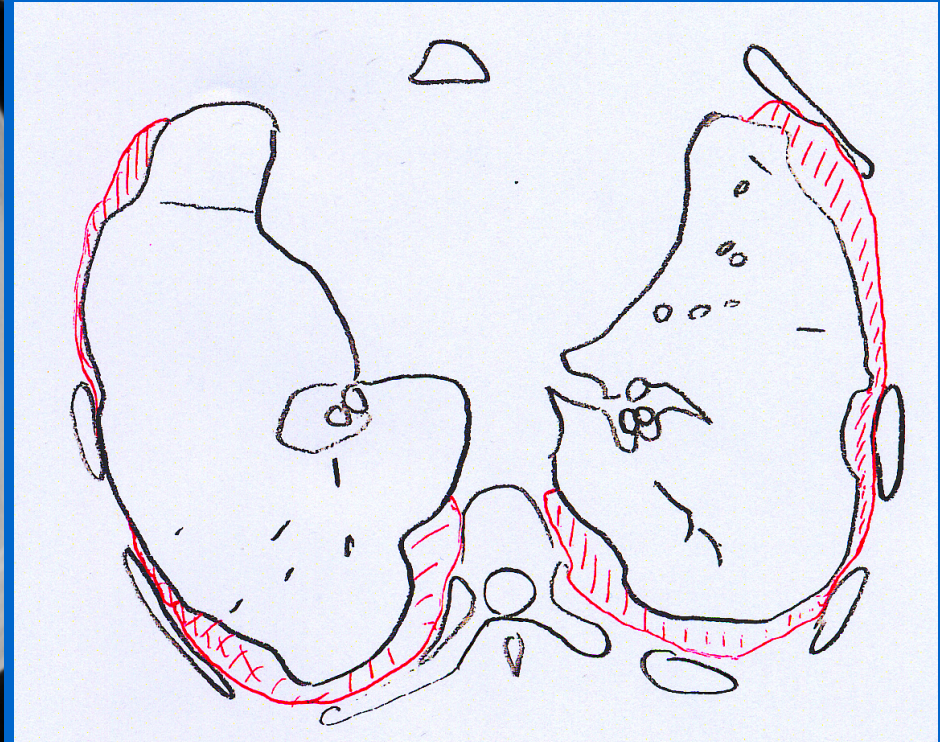
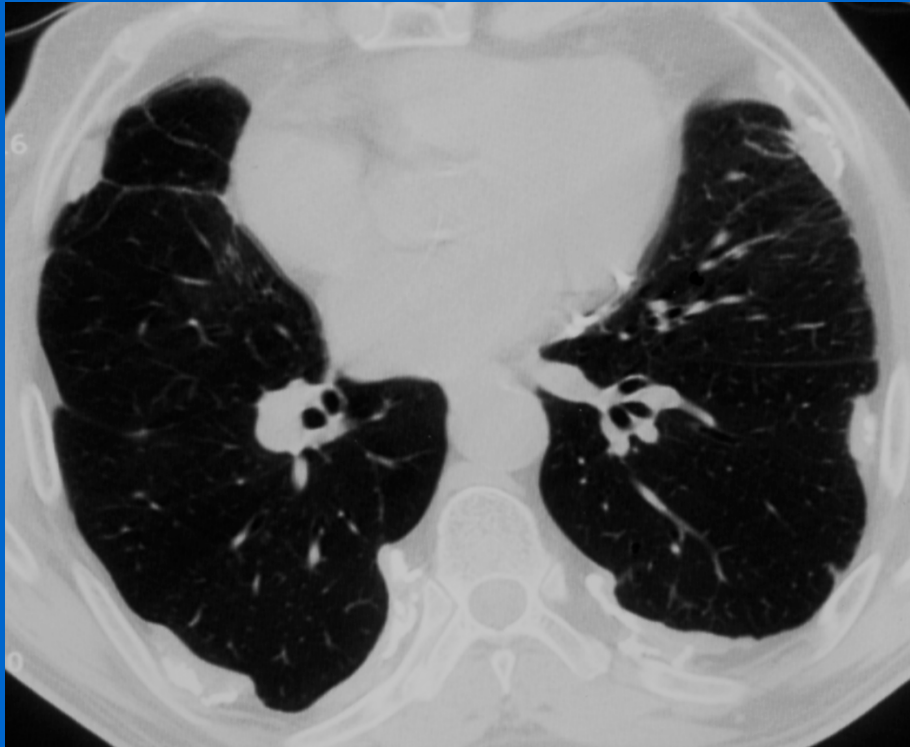
pariet A	1	pariet B	2	visc/pariet C	3
	4		5		6
Pleural Abnormalities Ex2/Ex3					
	7		8		9
Pleural Abnormalities Ex3/Ex3					
	10		11		12





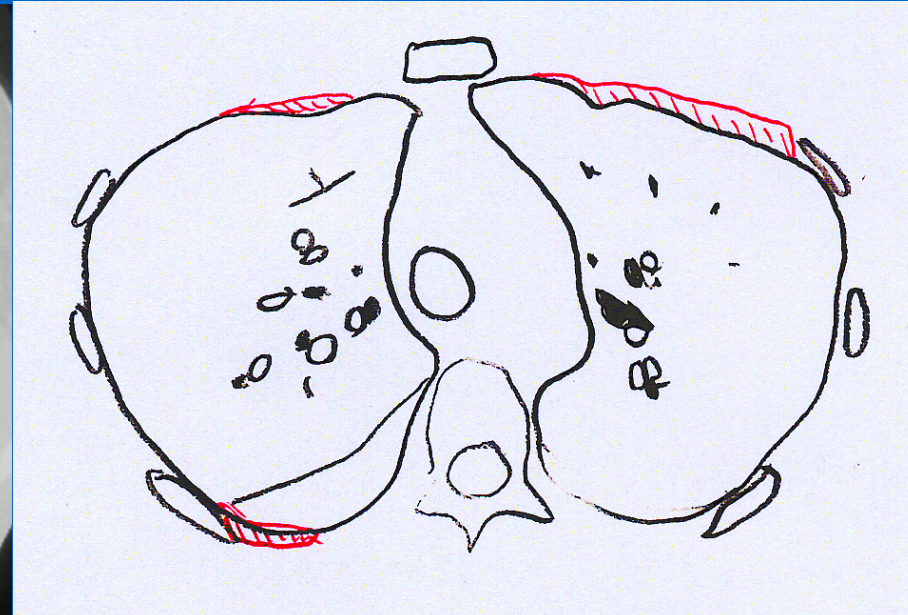
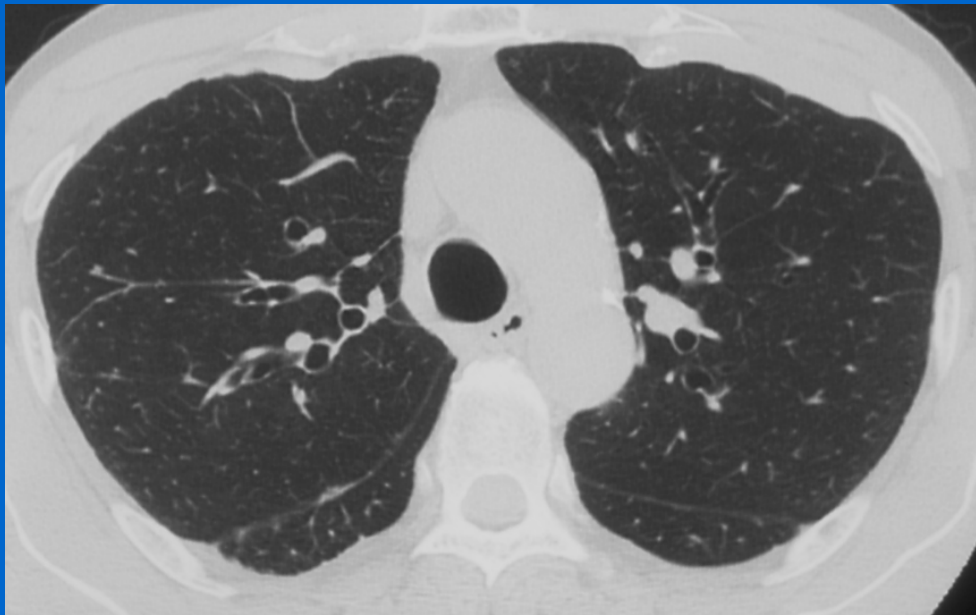
# CT-Klassifikation der Pneumokoniosen: Pleura III

pariet A	1	pariet B	2	visc/pariet C	3
	4		5		6
Pleural Abnormalities Ex2/Ex3					
	7		8		9
Pleural Abnormalities Ex3/Ex3					
	10		11		12



# CT-Klassifikation der Pneumokoniosen: Pleura IV

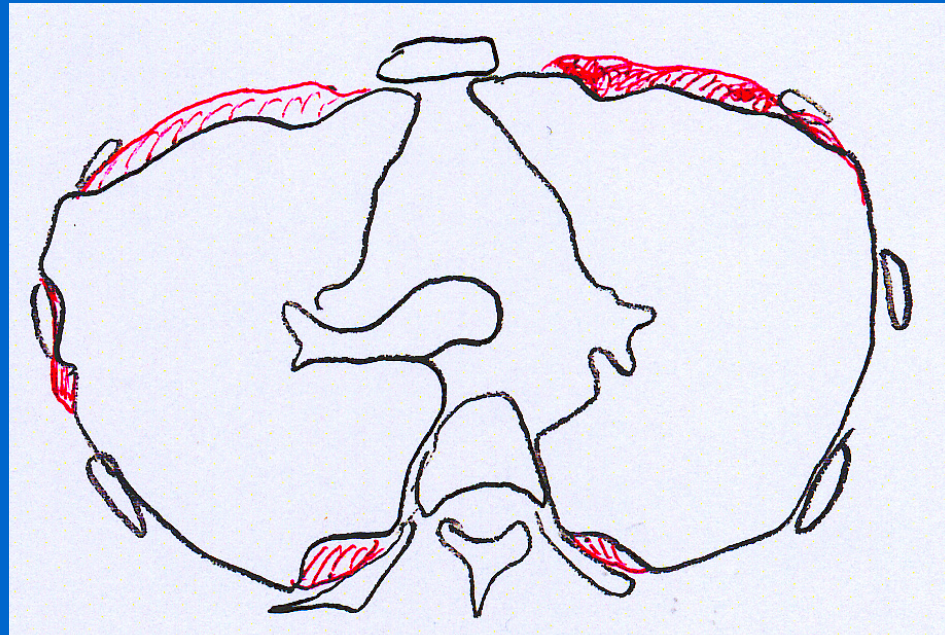
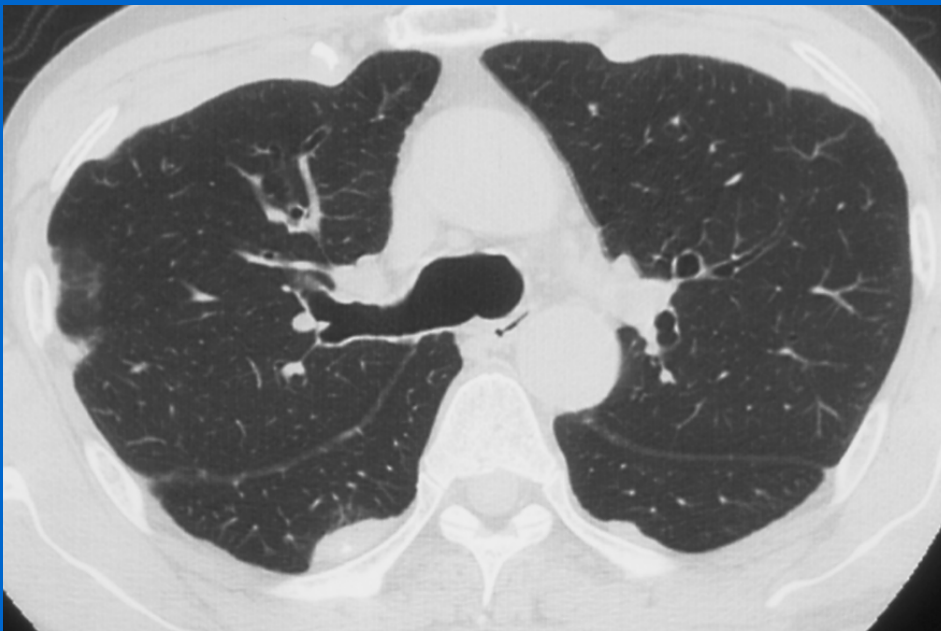
pariet A	1	pariet B	2	visc/pariet C	3
	4		5		6
Pleural Abnormalities Ex2/Ex3					
	7		8		9
Pleural Abnormalities Ex3/Ex3					
	10		11		12





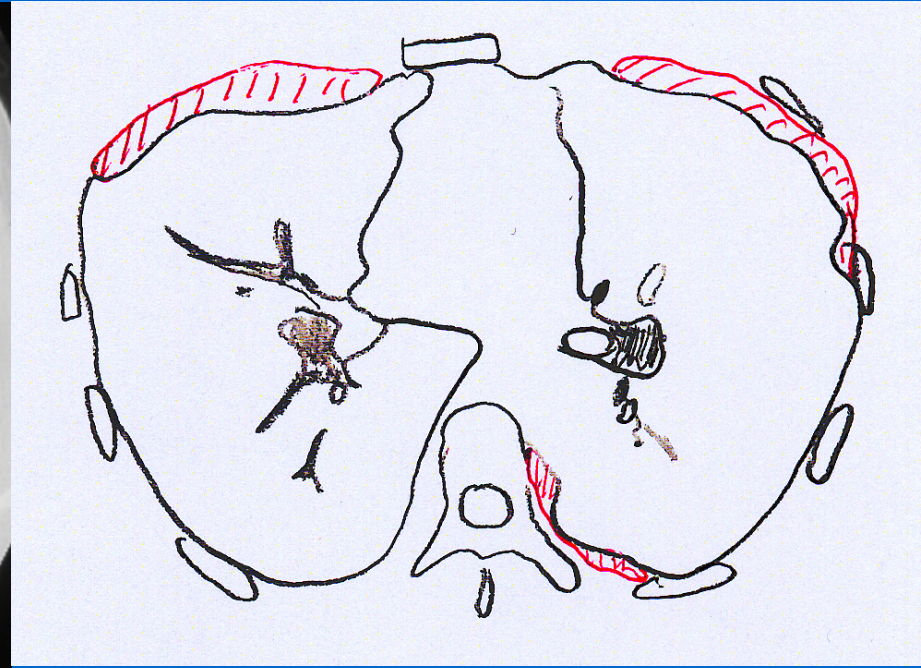
# CT-Klassifikation der Pneumokoniosen: Pleura V

pariet A	1	pariet B	2	visc/pariet C	3
	4		5		6
Pleural Abnormalities Ex2/Ex3					
	7		8		9
Pleural Abnormalities Ex3/Ex3					
	10		11		12



# CT-Klassifikation der Pneumokoniosen: Pleura VI

pariet A	1	pariet B	2	visc/pariet C	3
	4		5		6
Pleural Abnormalities Ex2/Ex3					
	7		8		9
Pleural Abnormalities Ex3/Ex3					
	10		11		12



Reference Films for CT Classification  
IV. Additional

IV. Symbols

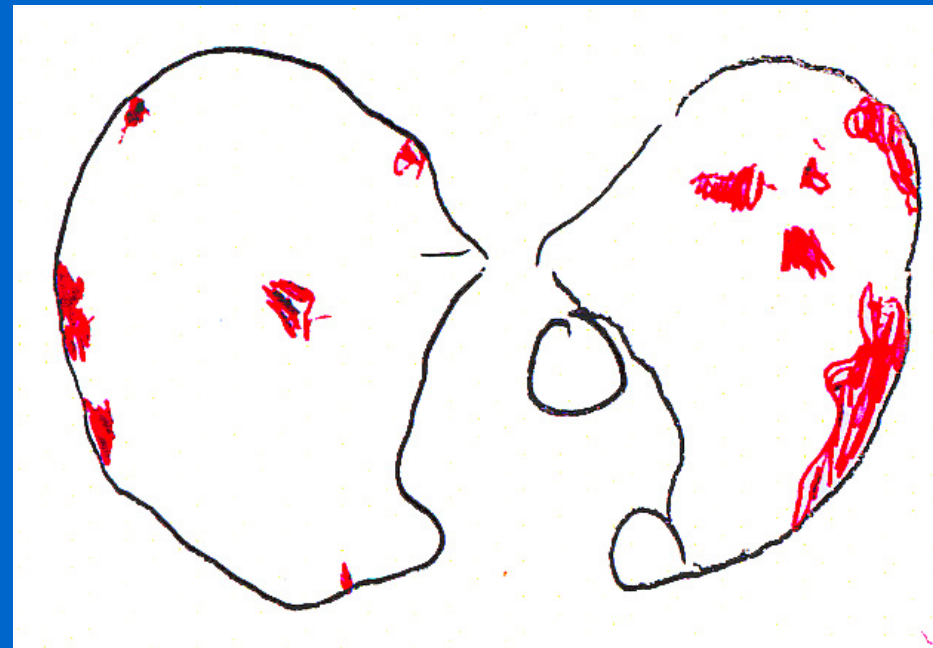
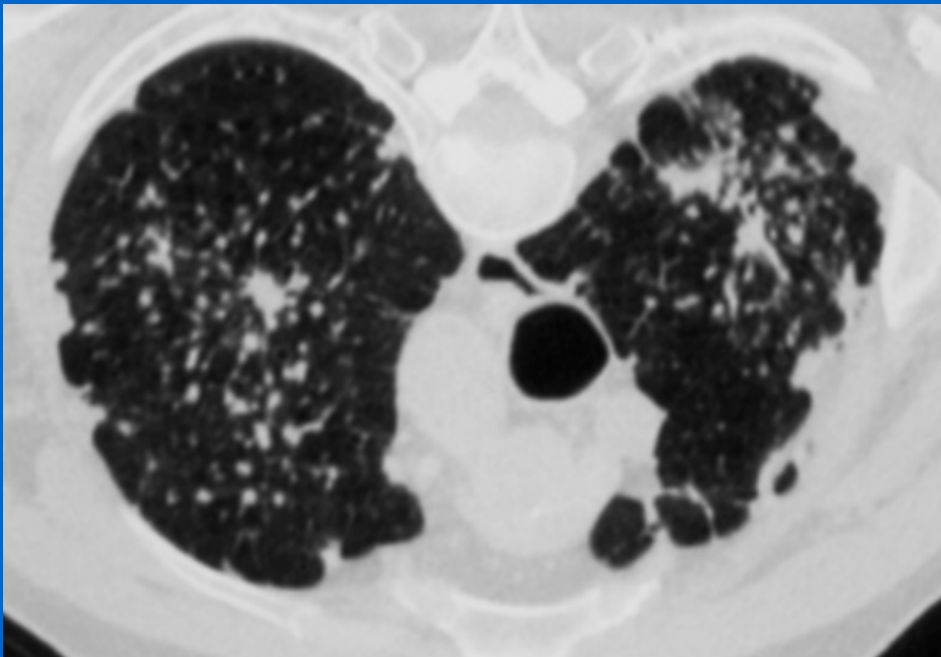
<b>AX</b> 1	<b>BE</b> 2	<b>BU</b> 3
<b>CA</b> 4	<b>MP</b> Hirose	<b>TB</b>
<b>RA</b>	<b>PB</b>	<b>FP</b>
<b>TIB</b>		



<b>1</b>	<b>AX</b>	<b>Coalescence of silicotic nodules</b>	<b>Rounded opacities P and Q, Pseudoplaques, Distortion (DI), mild paracicatricial emphysema</b>
<b>2</b>	<b>BE</b>	<b>Bronchiectasis</b>	<b>None</b>
<b>3</b>	<b>BU</b>	<b>Bulla</b>	<b>Subpleural type of emphysema, visceral type of pleural abnormalities, PB</b>
<b>4</b>	<b>CA</b>	<b>Large Opacity, size A, Rule out carcinoma or metastasis!</b>	<b>Centrilobular and pleural based opacities; pleural abnormality?</b>
<b>5</b>	<b>MP</b>	<b>Mosaic Perfusion</b>	<b>Centrilobular dotlike lesions, consolidation</b>
<b>6</b>	<b>TB</b>	<b>Tuberculosis</b>	<b>Bronchiectasis (BE); Distortion (DI); paracicatricial emphysema</b>
<b>7</b>	<b>RA</b>	<b>Rounded Atelectasis</b>	<b>Visceral type of pleural abnormalities; Calcification of the pleura and the diaphragm</b>
<b>8</b>	<b>PB</b>	<b>Parenchymal Band</b>	<b>Parietal and visceral type of pleural abnormalities, intralobular opacities</b>
<b>9</b>	<b>FP</b>	<b>Fat Pad</b>	<b>None</b>
<b>10</b>	<b>TD</b>	<b>Tree in Bud</b>	<b>Extensive disease, differential diagnostic considerations should be mentioned</b>
<b>11</b>			
<b>12</b>			

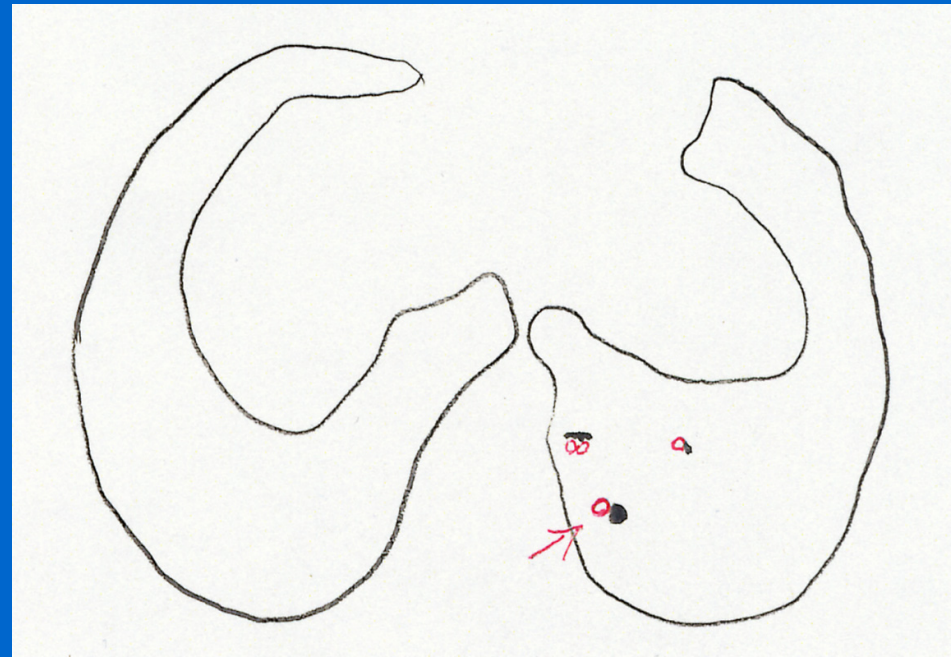
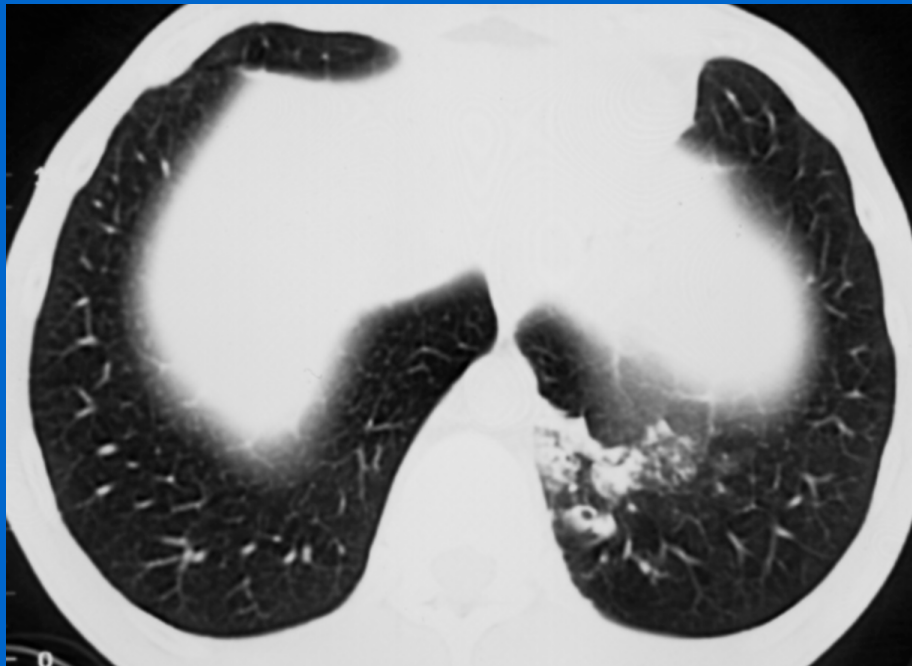
# CT-Klassifikation der Pneumokoniosen: AX

AX	1	BE	2	BU	3
CA	4	MP Hirose		TB	
RA		PB		FP	
TIB					



# CT-Klassifikation der Pneumokoniosen: BE

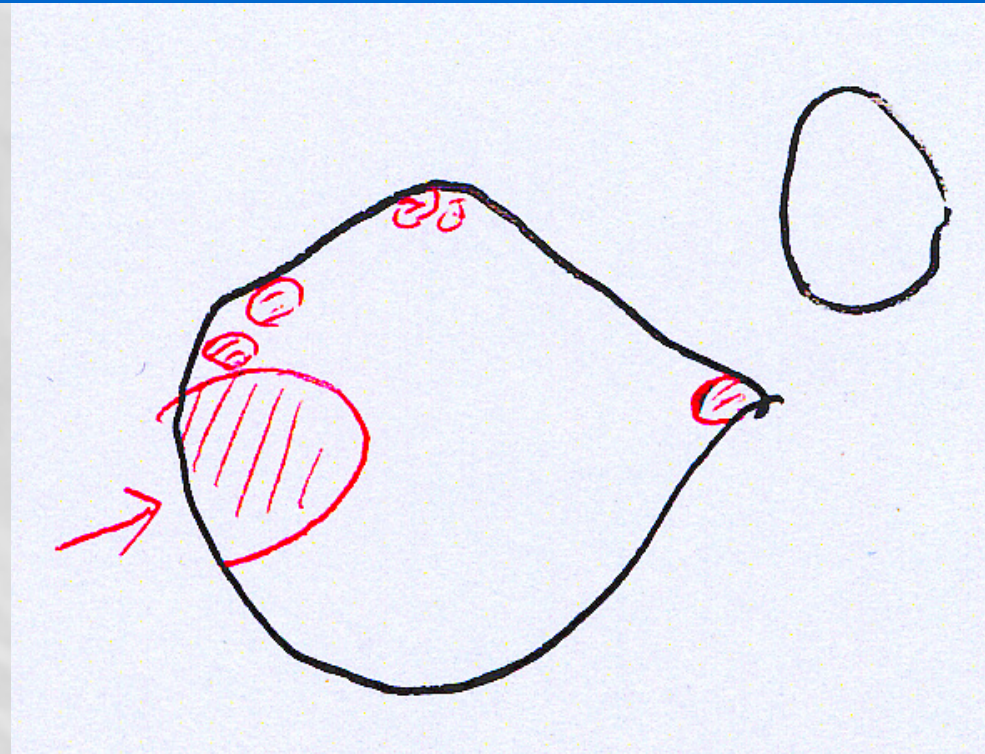
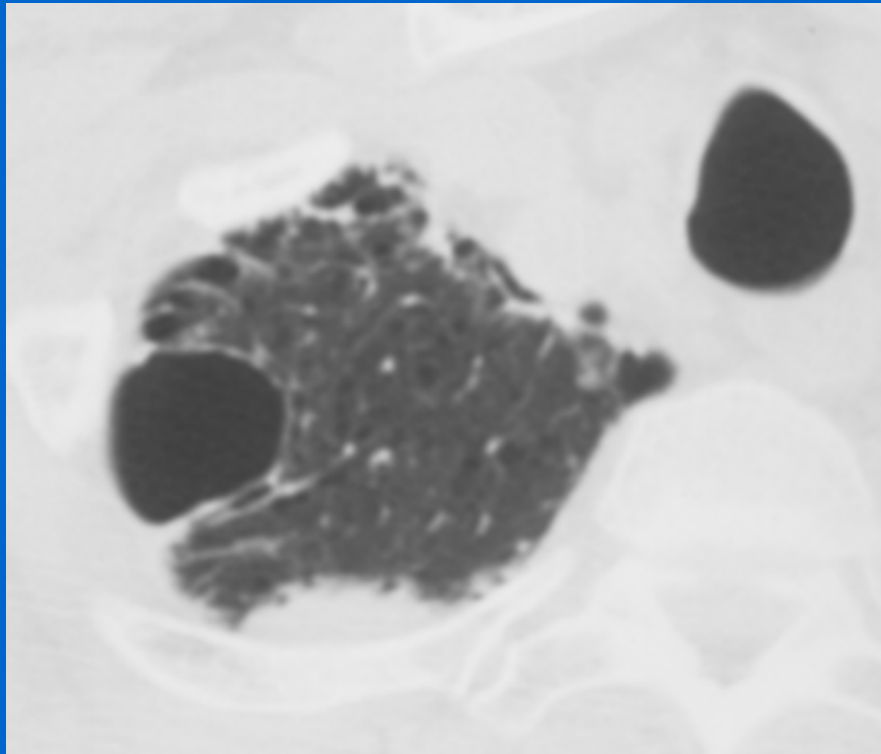
AX	1 BE	2 BU	3
CA	4 MP Hirose	TB	
RA	PB	FP	
TIB			





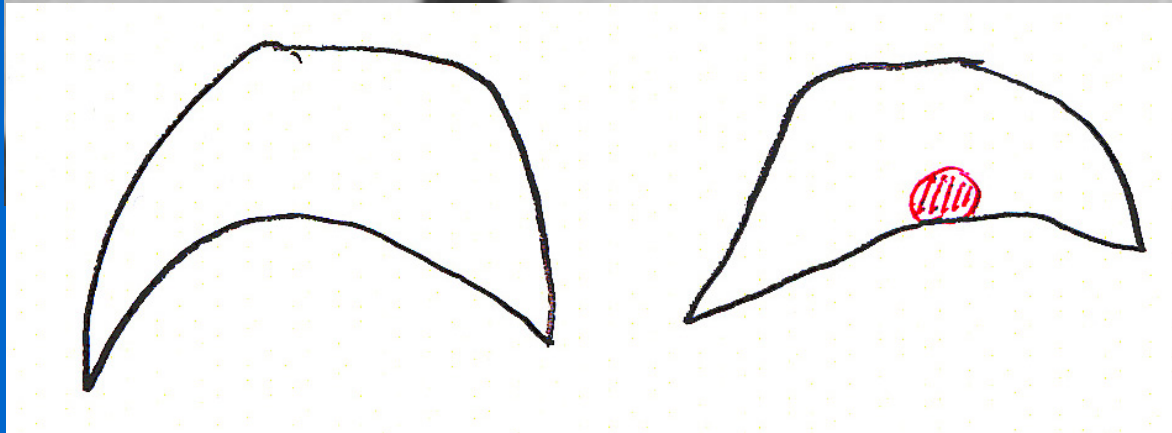
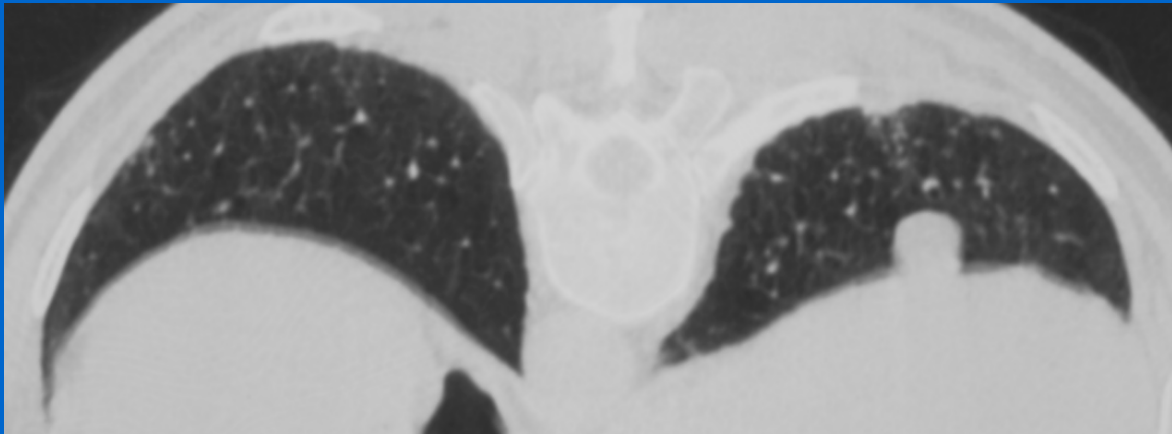
# CT-Klassifikation der Pneumokoniosen: BU

AX	1 BE	2 BU	3
CA	4 MP Hirose	TB	
RA	PB	FP	
TIB			



# CT-Klassifikation der Pneumokoniosen: CA

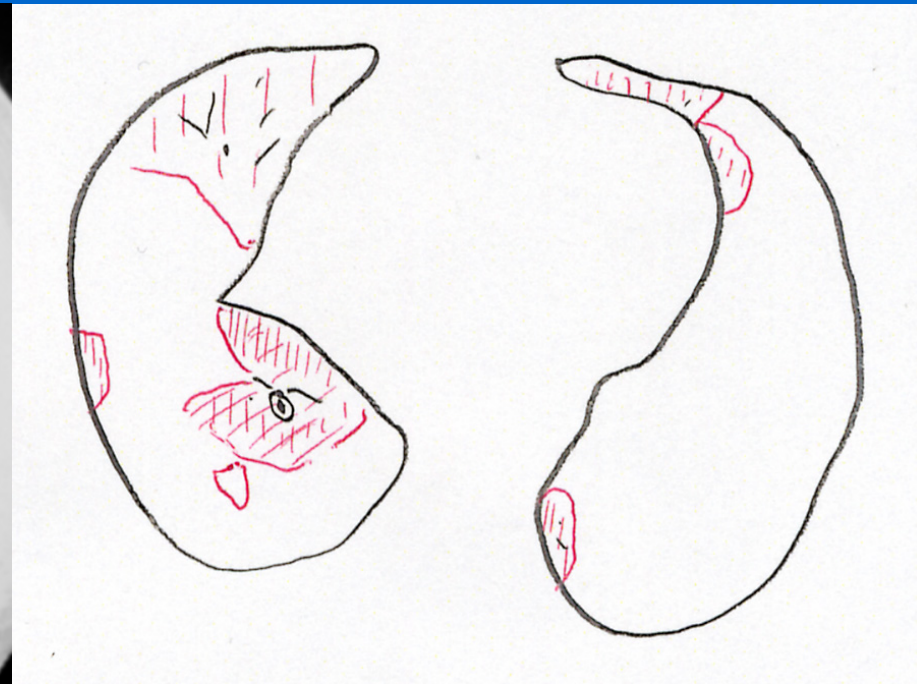
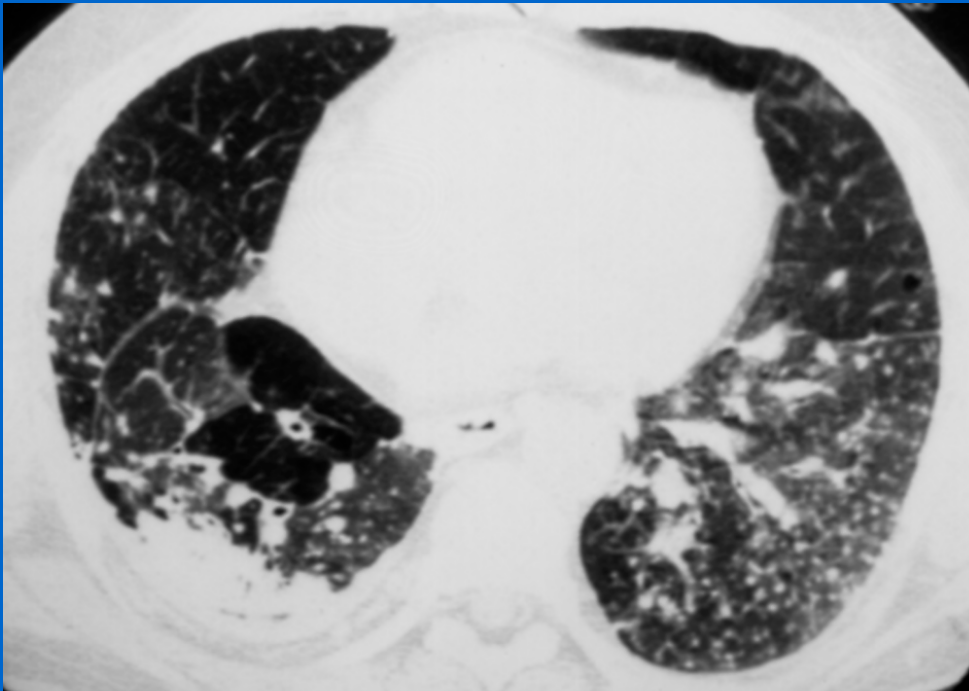
AX	1	BE	2	BU	3
CA	4	MP Hirose	TB		
RA		PB	FP		
TIB					





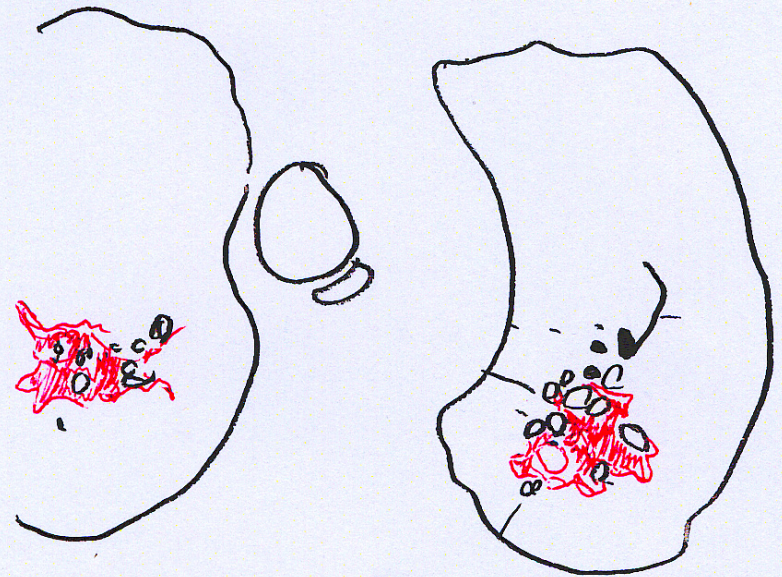
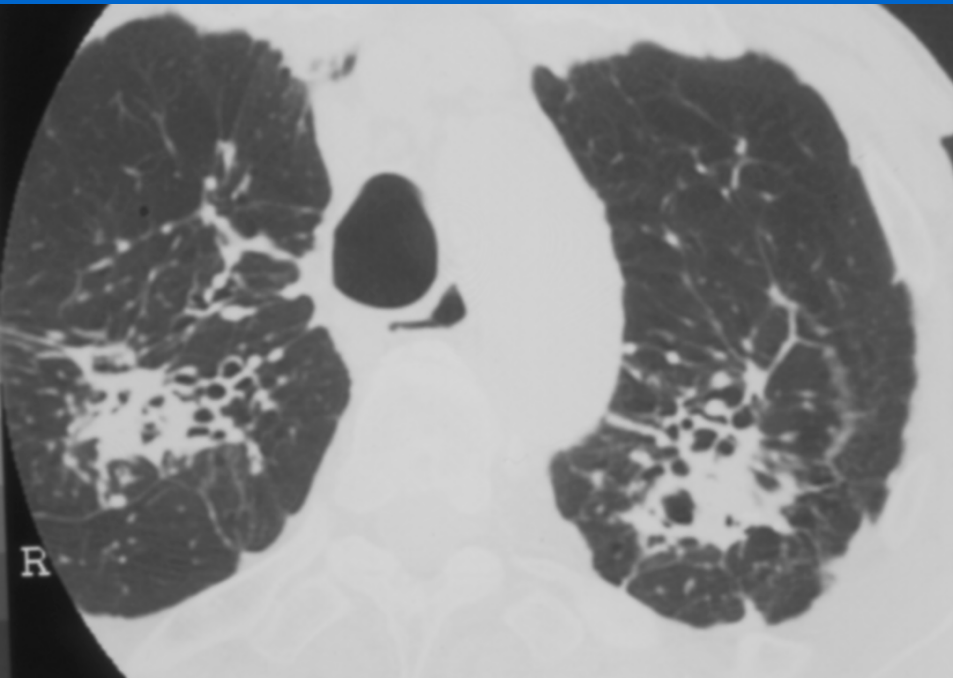
# CT-Klassifikation der Pneumokoniosen: MP

AX	1 BE	2 BU	3
CA	4 MP Hirose	TB	
RA	PB	FP	
TIB			



# CT-Klassifikation der Pneumokoniosen: TB

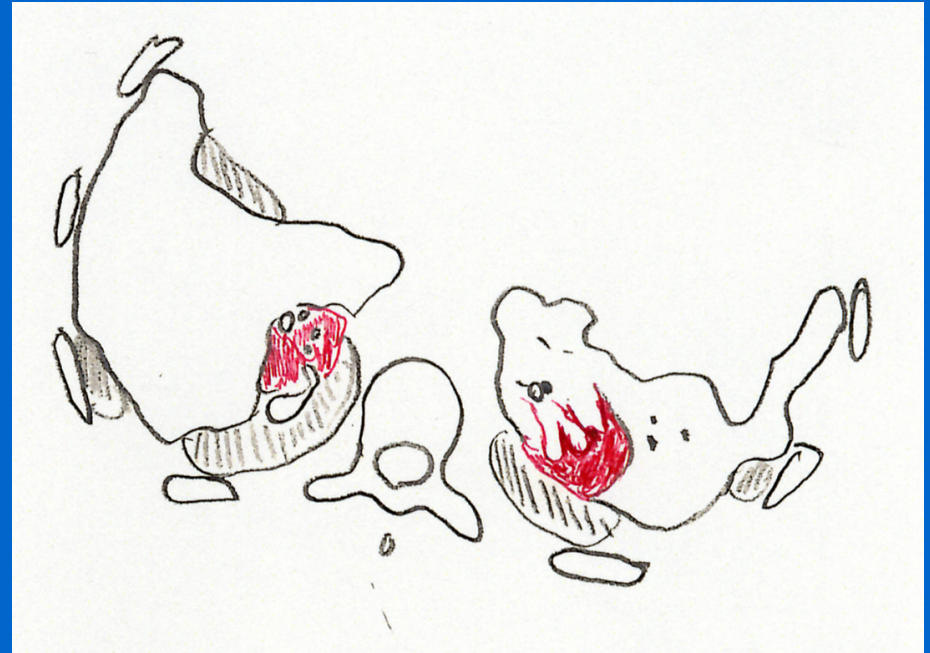
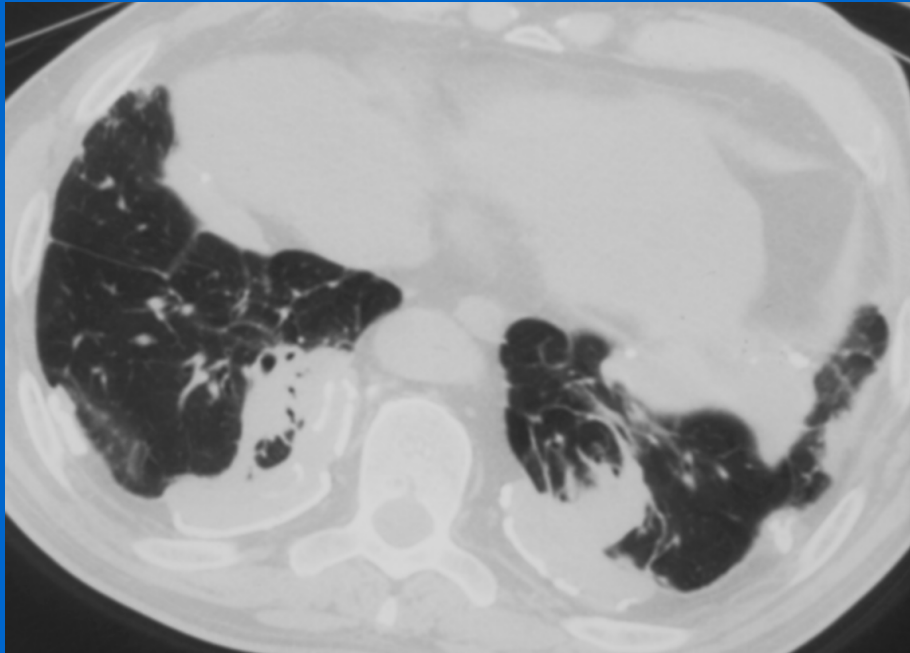
AX	1	BE	2	BU	3
CA	4	MP Hirose	TB		
RA		PB		FP	
TIB					





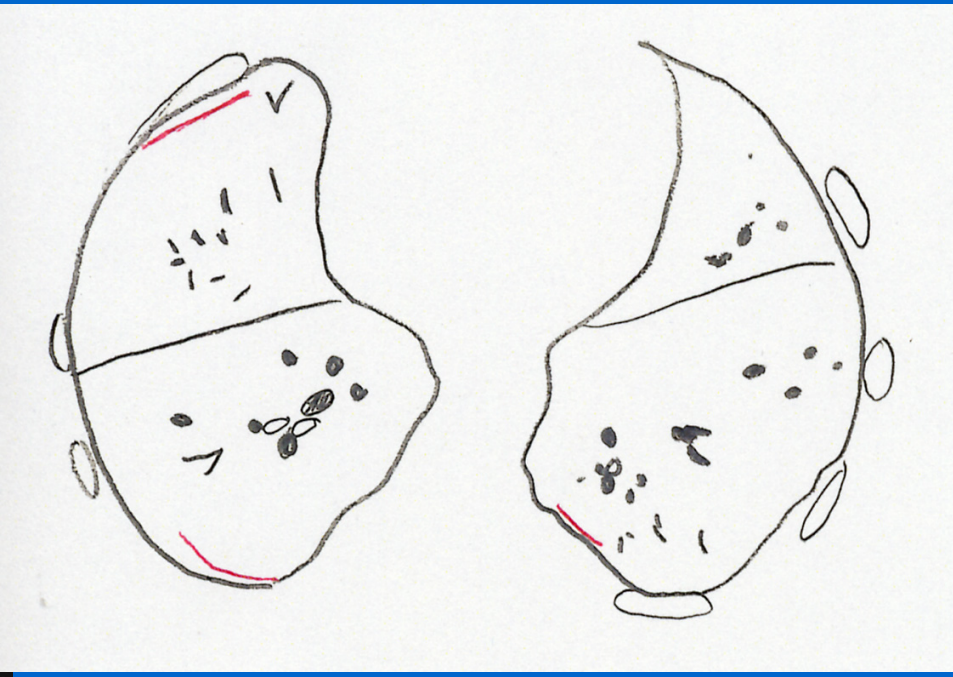
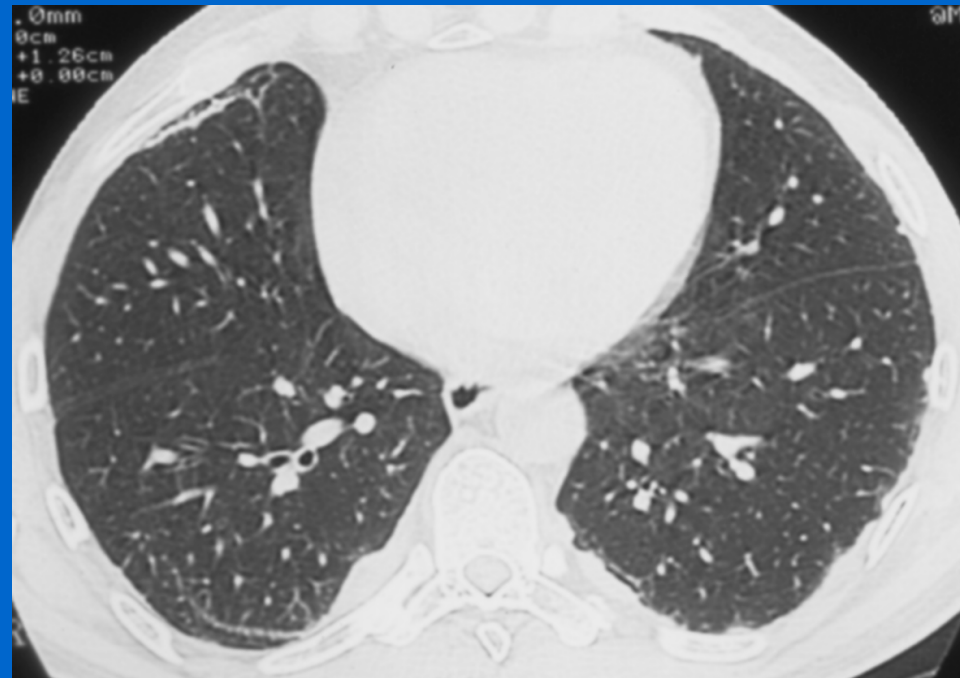
# CT-Klassifikation der Pneumokoniosen: RA

AX	1 BE	2 BU	3
CA	4 MP Hirose	TB	
RA	PB	FP	
TIB			



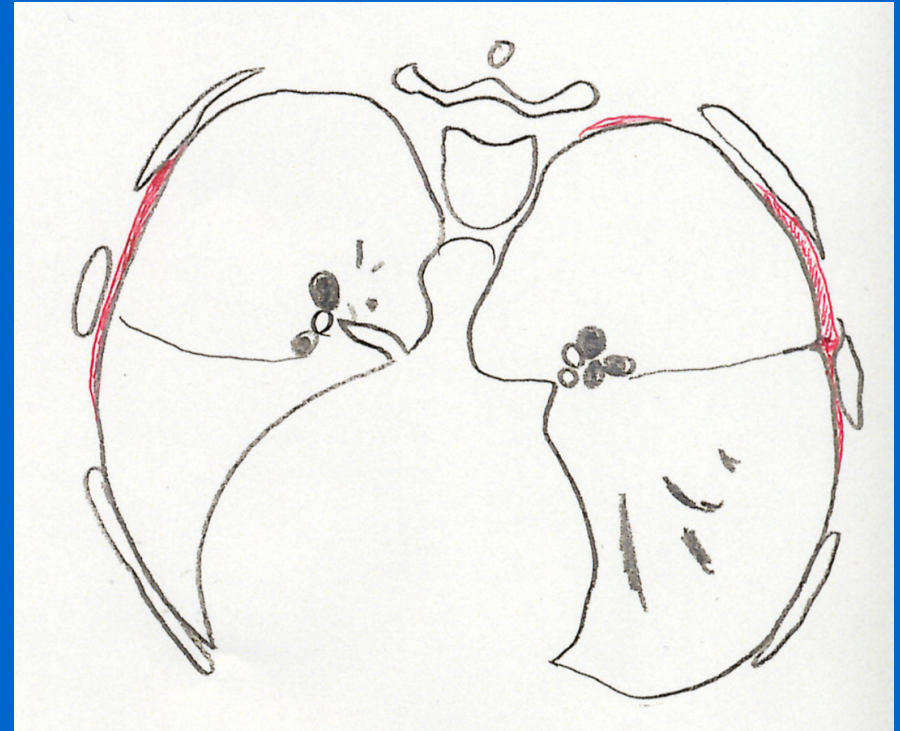
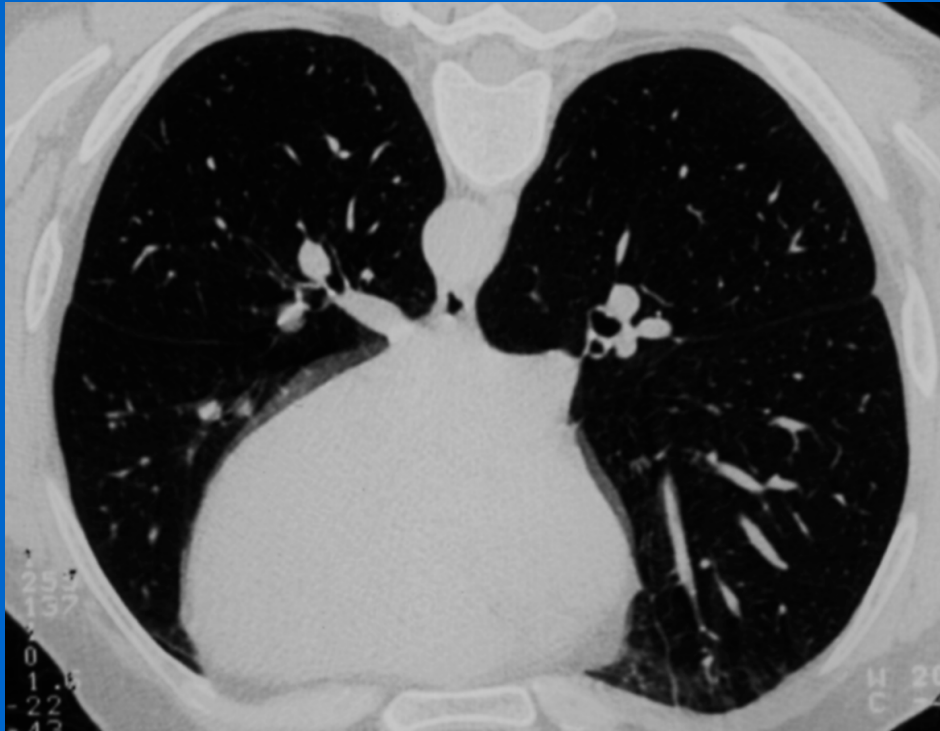
# CT-Klassifikation der Pneumokoniosen: PB

AX	1 BE	2 BU	3
CA	4 MP Hirose	TB	
RA	PB	FP	
TIB			



# CT-Klassifikation der Pneumokoniosen: FP

AX	1 BE	2 BU	3
CA	4 MP Hirose	TB	
RA	PB	FP	
TIB			





# CT-Klassifikation der Pneumokoniosen: TD

AX	1	BE	2	BU	3
CA	4	MP Hirose	TB		
RA		PB	FP		
TIB					

