TUBERCULOSIS AND SMOKING AS A RISK FACTOR FOR OBSTRUCTION IN LATIN AMERICA

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TUBERCULOSIS AND SMOKING AS A RISK FACTOR FOR OBSTRUCTION IN LATIN AMERICA

- Introduction
- Smoking and Tuberculosis in LA
- Association of these risk factors and obstruction
- Physiopathology
- Possible limitations
- Conclusions

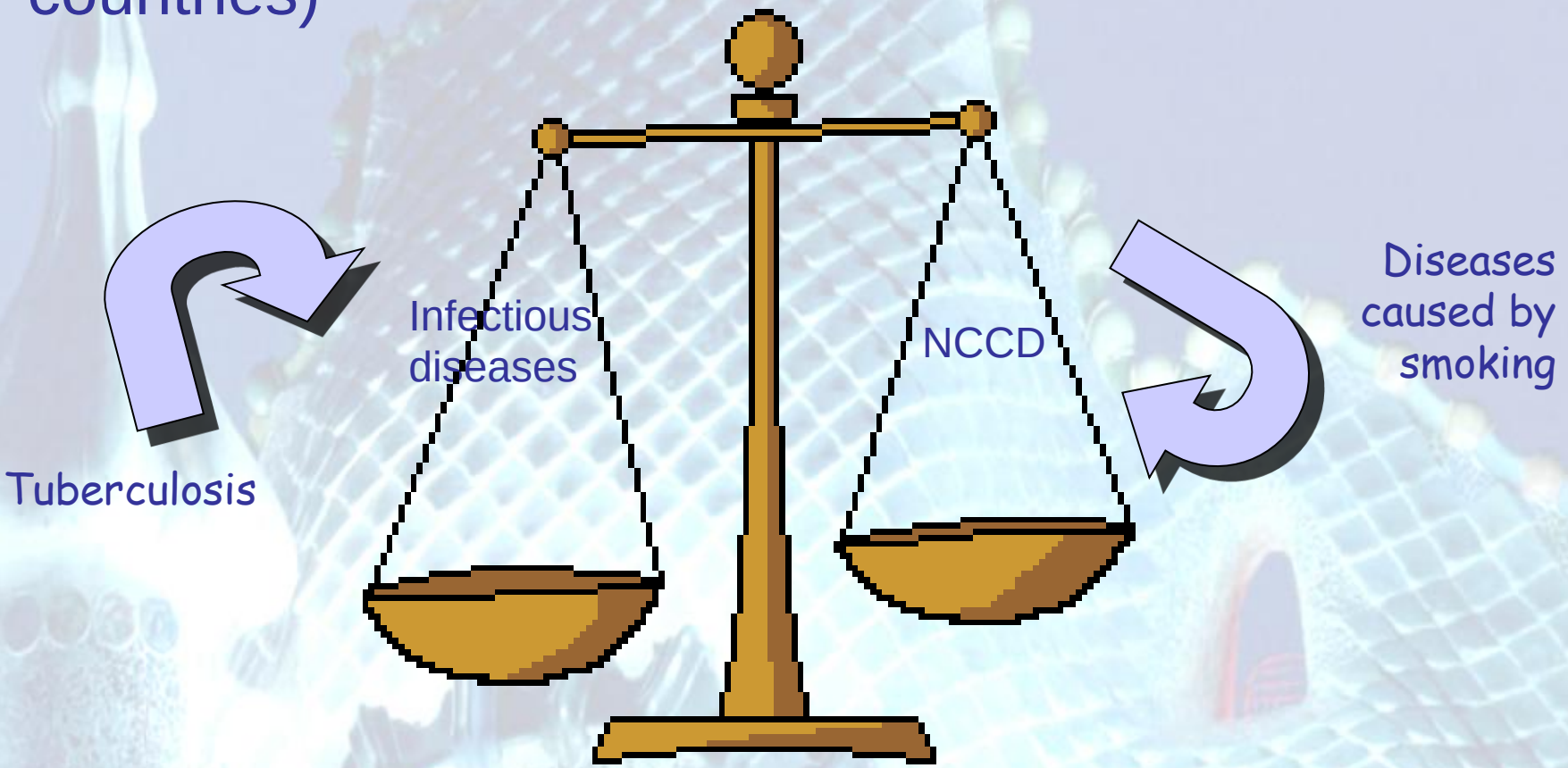
Introduction

- According to the GBD projections:
  - Chronic Obstructive Pulmonary Disease (COPD) and Tuberculosis (TB) are among the 10 leading causes of death and disability for low- and middle-income countries

Lancet 2006; 367: 1747–1757

Introduction

- The epidemiological transition (middle income countries)



The Three Millennium Goals 2015

- To reduce:
  - 25% of the HIV among young people
  - 50% of the mortality and incidence of TB
  - 50% of the malaria in the world

United Nations, FMI, World Bank, G-8

Tuberculosis in the world

- 1/3 of the world population is infected by TB
  - 100 millions infected/year
- 2 millions deaths/year
- 90% of these cases are concentrated in 22 countries (in terms of absolute numbers of cases)
- The five countries that rank first to fifth in terms of total numbers of incident cases in 2008 are:
  - India
  - China
  - South Africa
  - Nigeria
  - Indonesia

http://whqlibdoc.who.int/publications/2009

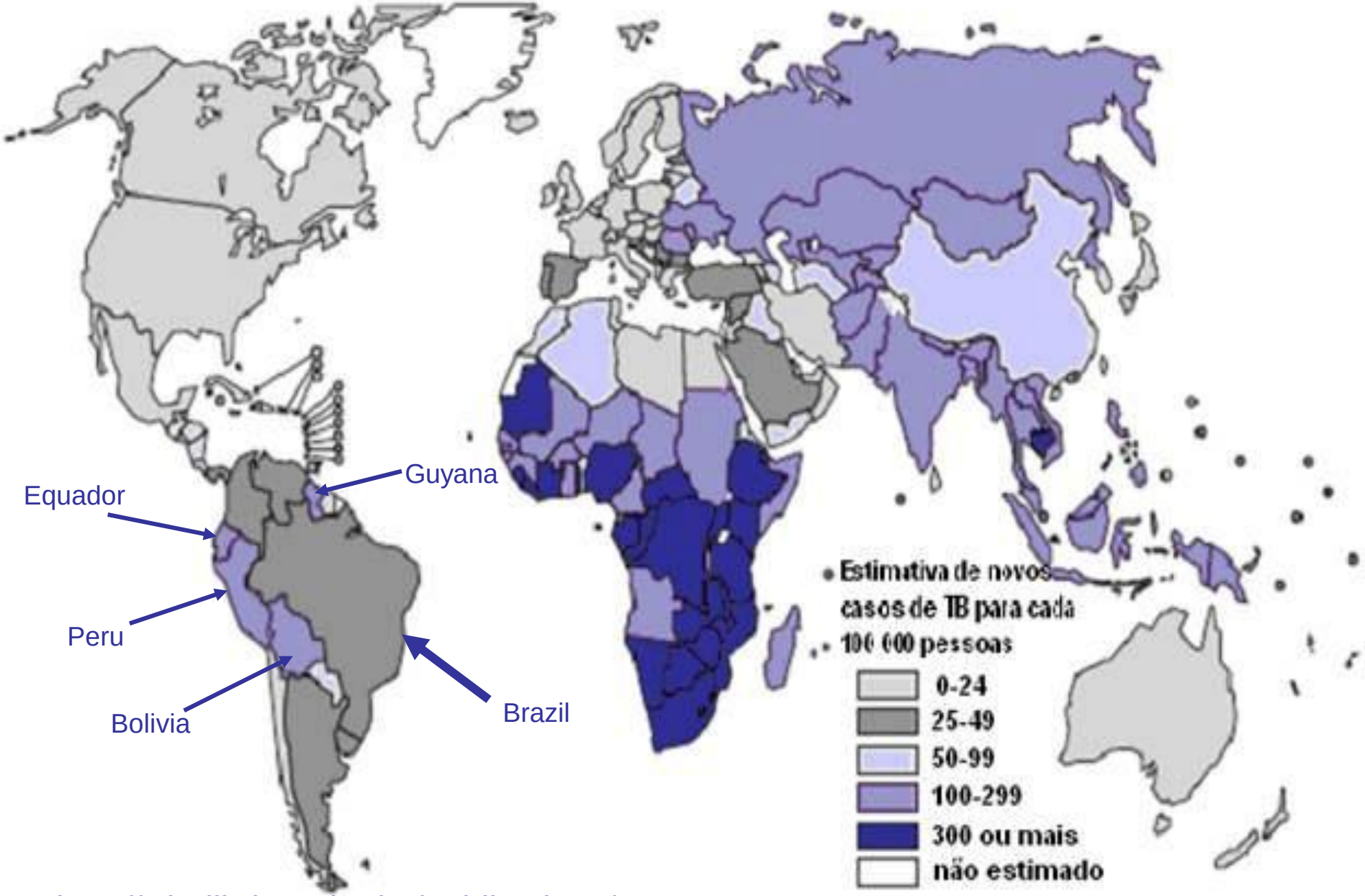
Tuberculosis in LA

- Brazil occupies the 16th place in the ranking (globally)

- In LA and Caribbean: Peru, Equator and Bolivia are the countries with the largest numbers of tuberculosis cases

http://whqlibdoc.who.int/publications/2009

ESTIMATION OF TUBERCULOSIS



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Smoking in LA (adults)

Country	Male (%)	Female (%)	Total
Argentina	28.9	22.6	25.8
Bolivia	31.0	28.6	29.9
Brazil	21.4	12.7	16.9
Chile	39.0	34.9	37.0
Colombia	26.8	11.3	18.9
Cuba	43.1	26.5	34.8
Uruguay	35.0	25.1	29.8
Venezuela	26.7	23.3	25.0

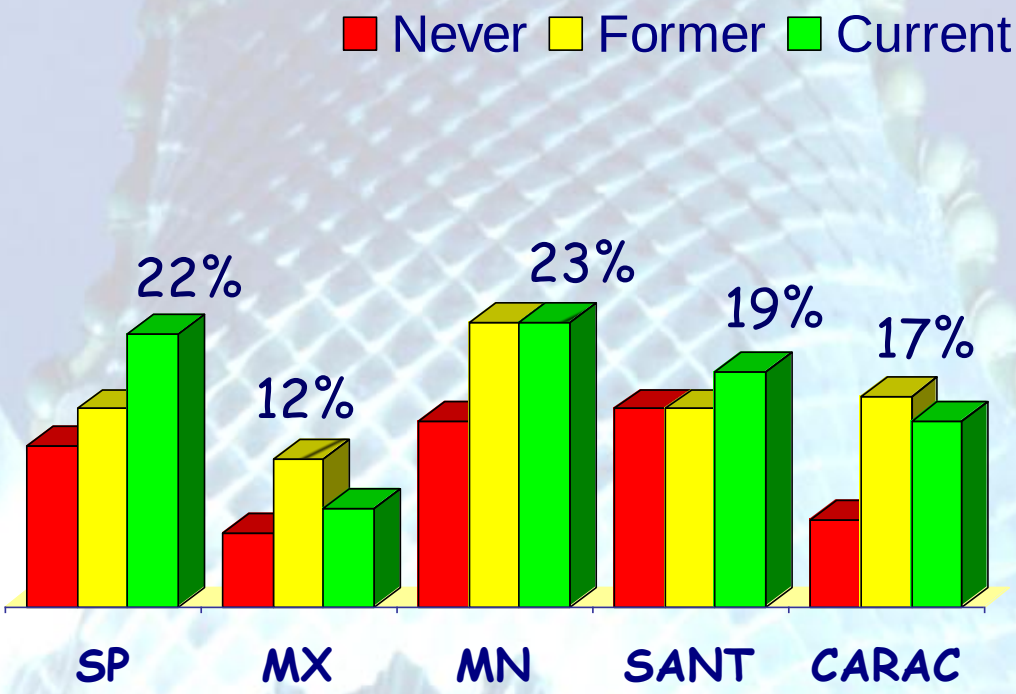
Int J COPD, 2008:3(2) Data from PAHO, 2005; Tobacco Atlas, 2006

Smoking in LA (adolescents)

Country	Male (%)	Female (%)	Total
Argentina	21.9	17.2	25.8
Bolivia	16.3	20.3	12.0
Brazil	12.3	9.1	12.9
Chile	33.9	27.5	39.2
Colombia	32.2	31.0	33.4
Cuba	10.0	11.2	8.8
Uruguay	20.2	16.4	22.9
Venezuela	7.4	6.0	8.4

The Global Youth Tobacco Survey (Warren et al, 2008)

Association of smoking and obstruction



Prevalence of COPD by smoking. THE PLATINO STUDY

Association of tuberculosis and obstruction

The PLATINO study

	OVERALL	
	OR(95% CI)	P value
Unadjusted	2.75 (1.88-4.03)	< 0.001
Adjusted *	2.57 (1.69-3.93)	< 0.001

Odds ratio (OR) for airflow obstruction according to medical diagnosis of tuberculosis

* Adjusted for: study site, sex, age, schooling, ethnicity, smoking, exposure to dust at workplace, exposure to coal and biomass for cooking or heating, history of hospitalization at childhood

Eur Respir J 2007; 30: 1–6

Association of tuberculosis and obstruction

The PREPOCOL study

	OVERALL	
	OR(95% CI)	P value
Unadjusted	4.80 (4.0-5.9)	< 0.001
Adjusted *	2.94 (1.58-5.49)	0.001

Odds ratio (OR) for airflow obstruction according to medical diagnosis of tuberculosis

* Adjusted: sex, age, altitude, smoking, exposure to dust, gas or smoke

CHEST 2008 Feb;133(2):333-4

Association of tuberculosis and obstruction

Spirometric values	Medical diagnosis TB		P value
	No	Yes	
FEV1 pre-BD	2.54±0.77	2.17±0.71	0.000
FEV1 pre-BD% pred.	95.69±18.32	88.14±22.27	0.000
FEV1 post-BD	2.63±0.77	2.26±0.70	0.000
FEV1 post-BD% pred.	95.82±17.14	91.43±18.80	0.007
FVC pre-BD	3.37±0.97	3.15±0.93	0.009
FVC pre-BD% pred.	98.69±16.96	98.15±20.18	0.72
FVC post-BD	3.38±0.94	3.12±0.88	0.003
FVC post-BD% pred.	98.12±15.52	96.13±16.34	0.16
FEV1/FVC pre-BD	0.75±0.09	0.69±0.11	0.000
FEV1/FVC post-BD	0.78±0.08	0.73±0.11	0.000

Eur Respir J 2007; 30: 1–6

Association of tuberculosis and obstruction

- Mean difference for FEV1 - 0.35 ml
- Mean difference for FVC - 0.25 ml
- The FEV1/FVC ratio showed a marked reduction, characterised by an obstructive pattern

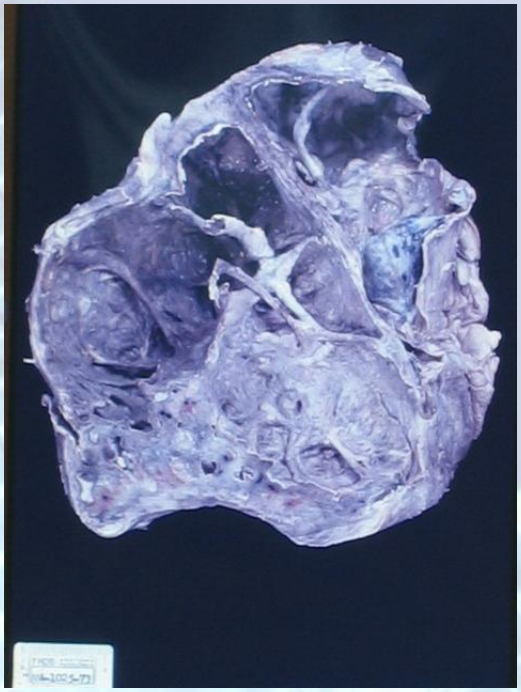
Eur Respir J 2007; 30: 1–6

Physiopathology (tuberculosis and obstruction)

- Possible mechanisms include:
  - bronchial stenosis
  - lung scarring
  - increase of the activity of the matrix metalloproteinases enzymes contributing to pulmonary damage

Thorax 2006; 61: 259–266
Int J Tuberc Lung Dis 2001; 5: 441–44
Thorax 2000;55: 32–38

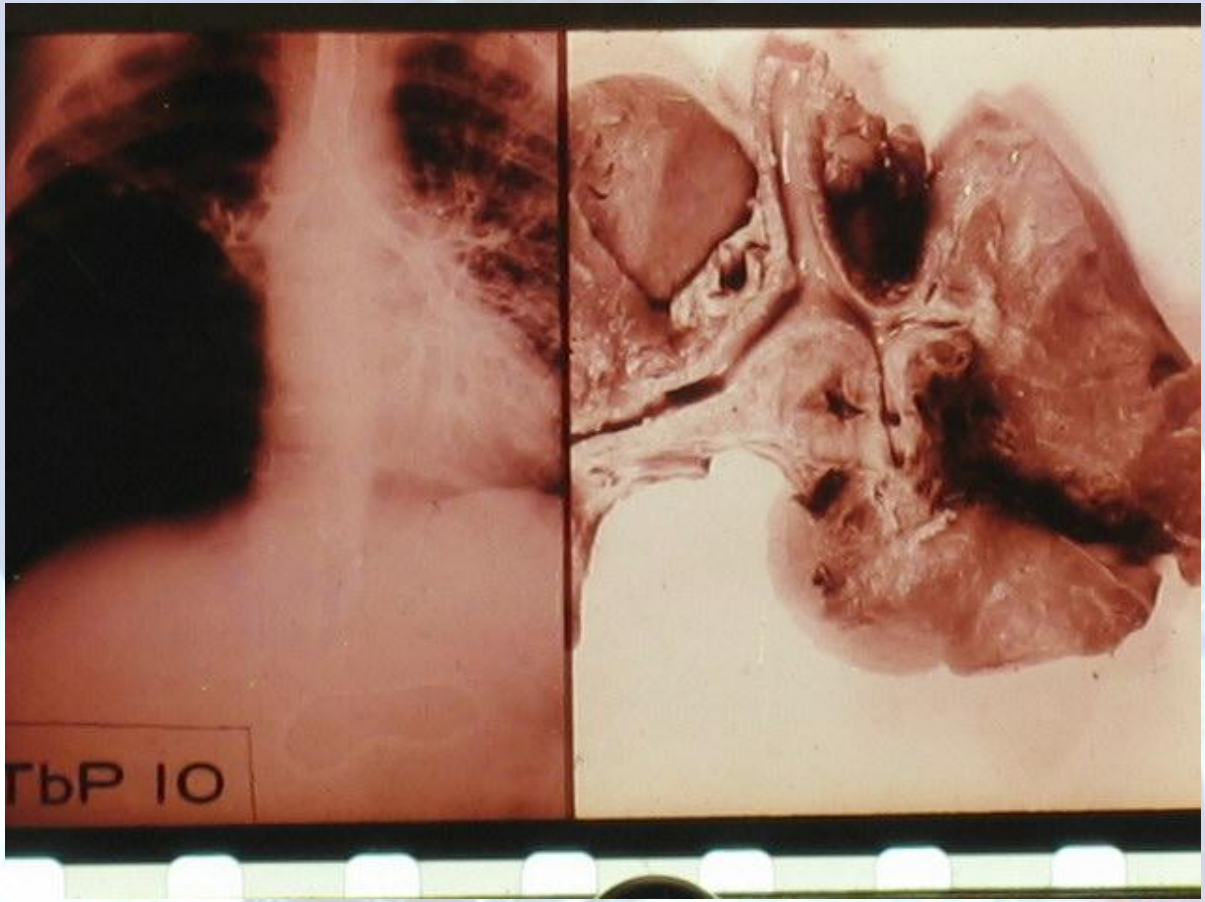
Physiopathology



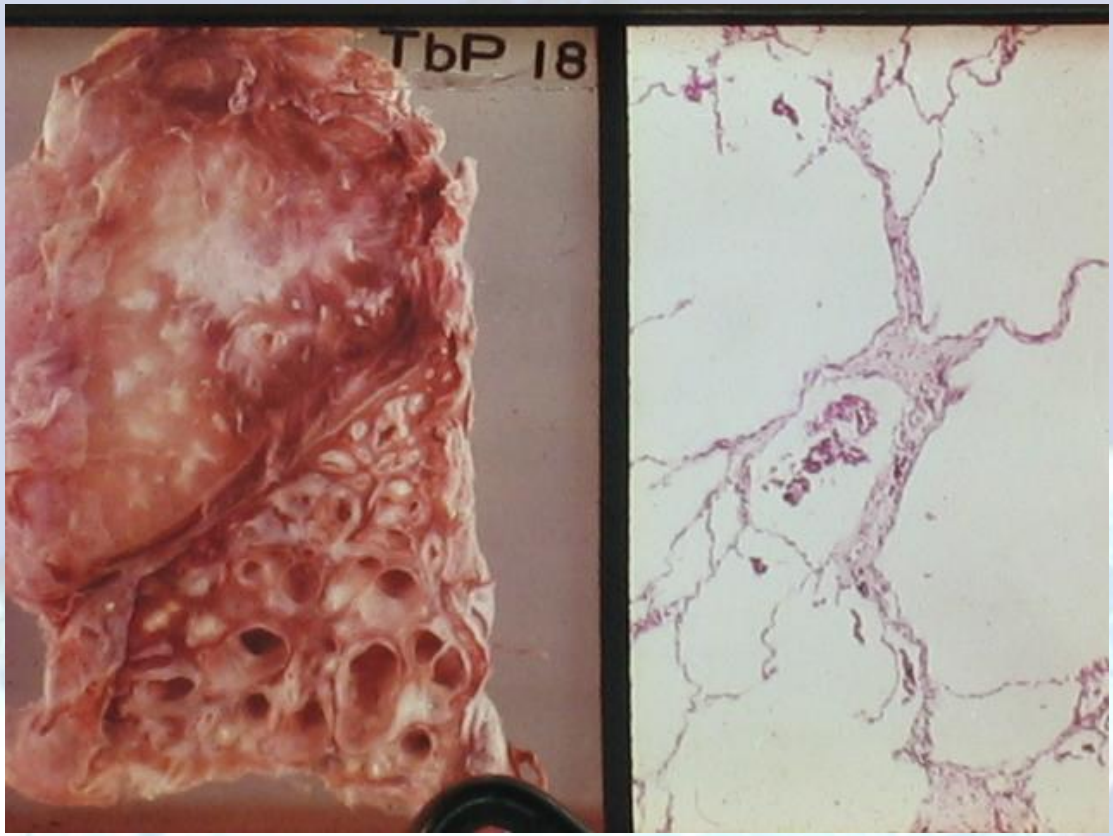
Physiopathology

Physiopathology

Physiopathology



Physiopathology



Physiopathology

Limitations

- Few studies conducted in LA
- Most were carried out in Africa and Asia
- Self-reported diagnosis of tuberculosis (schooling)
- Recall bias (treatment)
- Reverse causality (age)

Conclusions

- TB and smoking are still an important public health problem in LA
- It seems that the association between TB and obstruction is independent of other causes
- Prevention and adequate treatment of TB would reduce the burden of airflow obstruction in developing countries

Thanks

Gracias

Obrigada