Prospective study of diabetes and quality of blood glucose control among tuberculosis patients

Blanca I Restrepo, Ph.D.
Assistant Professor

University of Texas-Houston
School of Public Health
Brownsville Campus

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Co-authors

- University of Texas- SPH Brownsville
  - Joseph B. McCormick
  - Susan P. Fisher-Hoch
- University of Texas HSC-Houston
  - Hossein Rahbar
- Secretaría de Salud de Tamaulipas
  - Francisco Mora

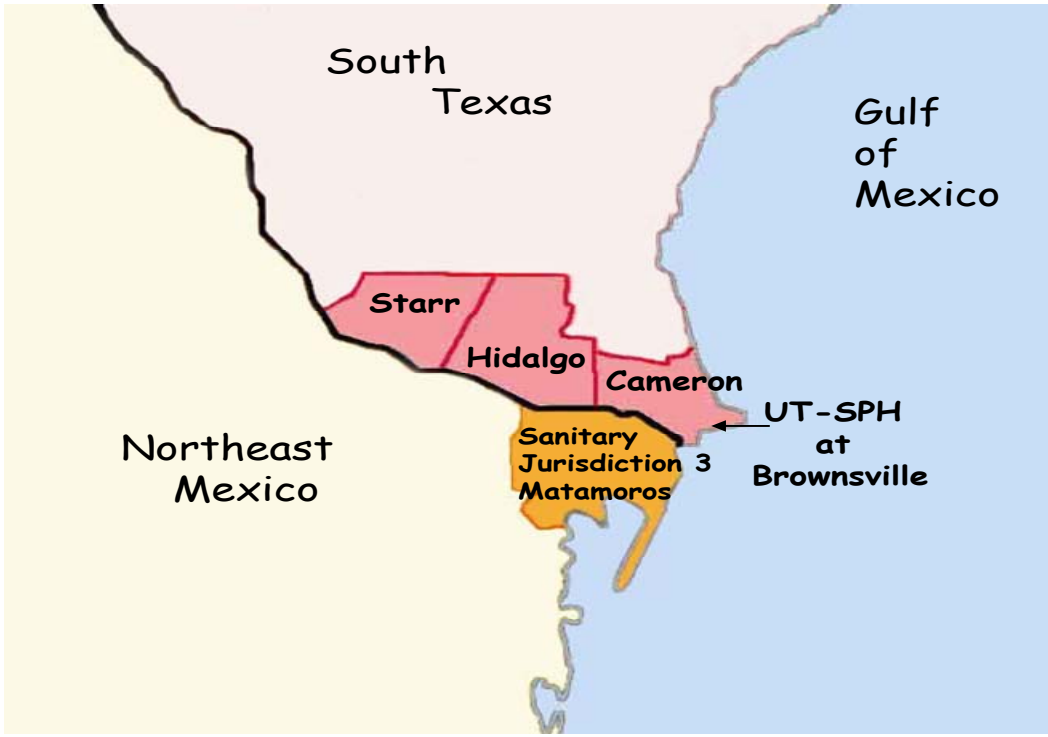
Background

- Type 2 diabetes: a "minor" risk factor for TB
  - Individual has 2 to 8-fold risk for TB
    - HIV: 170-fold risk
- Growing number of publications describing the association
  - Pandemic of type 2 diabetes
  - Overlaps countries with high burden for TB

- Retrospective study on more than 5000 TB patients from both sides of the Texas/Mexico border
  - Datasets used: Health department for surveillance
  - Self reported diabetes was significantly more prevalent among Mexican Americans with TB than in the general population
  - TB patients who reported diabetes presented with:
    - Delayed smear and culture conversion during therapy
    - A significantly higher prevalence of MDR-TB

Question

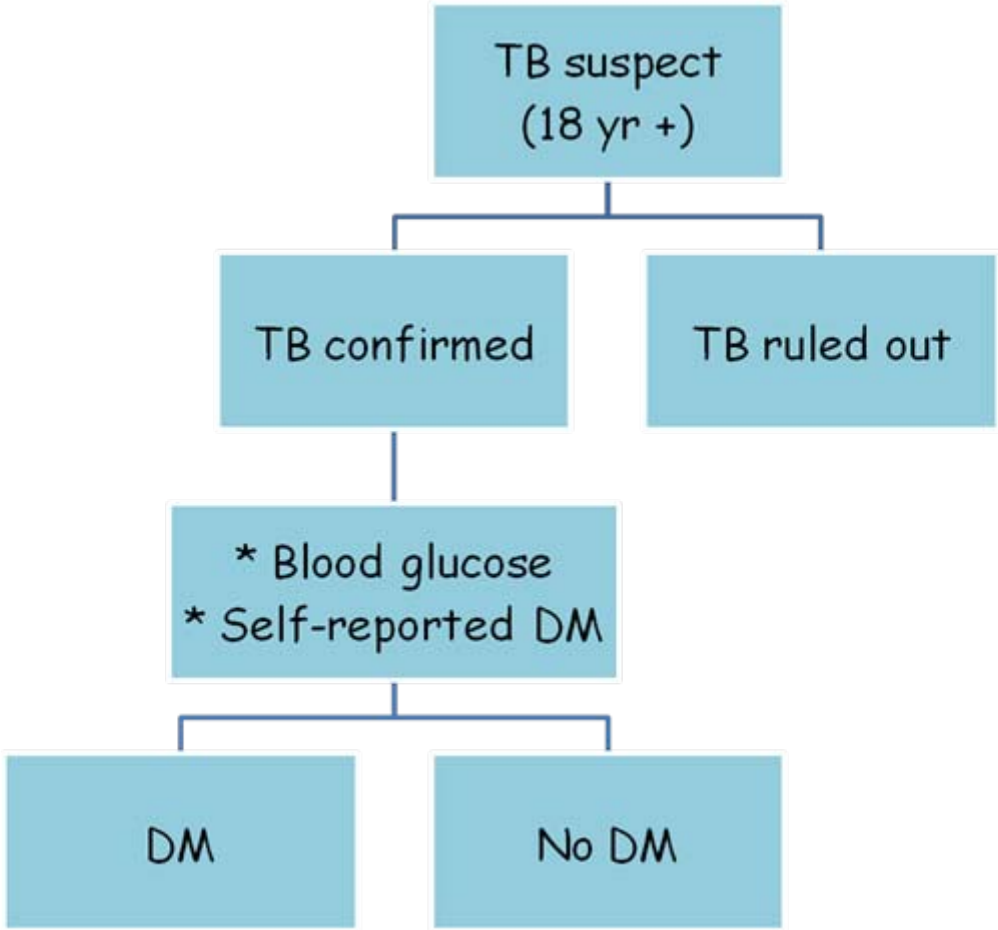
- What is the contribution of diabetes on the current epidemiology of TB?



Aim

- Conduct a prospective study to determine:
  - Prevalence of blood-confirmed diabetes among TB patients
  - Quality of blood glucose controls among TB patients with diabetes (TB-DM)
  - Sociodemographic profile of TB-DM
  - Impact of diabetes on the clinical presentation of TB

Patient enrollment and classification



DM { Hyperglycemia { Random ≥ 200 mg/dl; Fasting ≥ 126 mg/dl; Self-reported DM

No DM { normoglycemia; no self-report DM

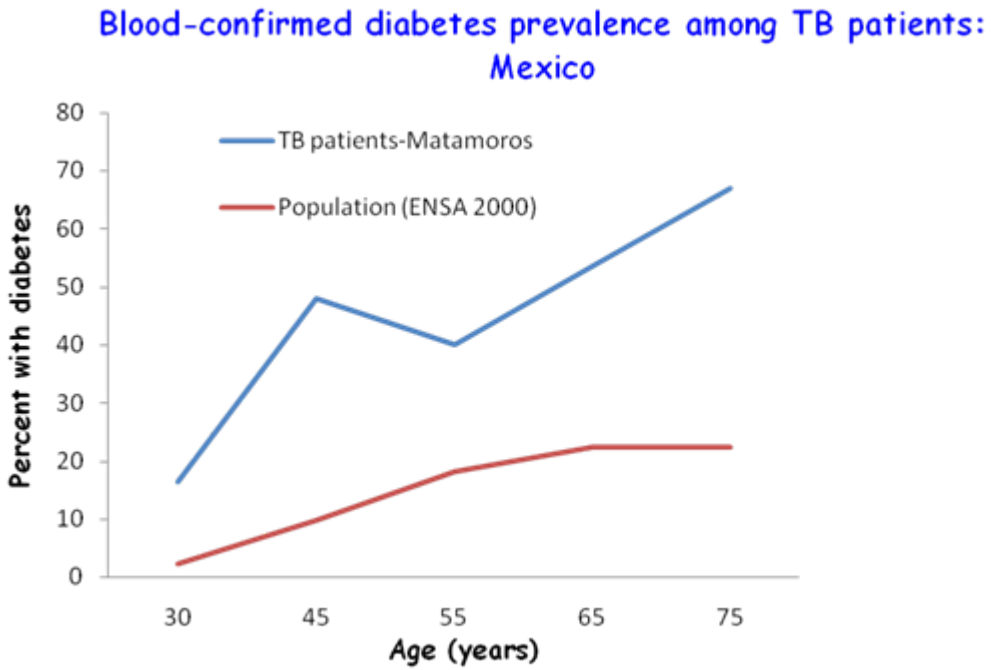
RESULTS

Socio-demographic characteristics of TB patients from the Texas-Mexico border

	Texas (n=27)	Mexico (n=79)	Total (n=106)
Mean age (SD)	46 (23)	43 (20%)	44 (17)
Female	12 (44%)	25 (32%)	37 (35%)
Hispanics	27 (100%)	79 (100%)	106 (100%)
White Race	27 (100%)	78 (99%)	105 (99%)
Place of birth			
Texas	10 (37%)	0 (0%)	10 (10%)
Mexico	17 (63%)	78 (99%)	95 (91%)

Prevalence of diabetes among TB patients

	Texas (n=27)	Mexico (n=79)	Total (n=106)
Self reported	11 (41%)	22 (28%)	33 (31%)
Previously undiagnosed	0 (0%)	5 (6%)	5 (5%)
Total	11 (41%)	27 (34%)	38 (36%)



Diabetes characteristics

	Texas n=11	Mexico n=27	Total n=38
High HbA1c, n(%)	10 (91%)	15 (56%)	25 (66%)
Years with DM, mean(SD)	12.3 (8.8)	7.6 (7.6)	12.3 (8.2)

Sociodemographics by diabetes status

	DM+ n= 38	DM- n=68	P value	OR (95% CI)
Age, mean (±SD)	49 (14)	41 (17)	0.04	
Female gender	18 (47%)	19 (28%)	0.05	2.3 (1.0, 5.3)
Employment				
Employed	19 (50)	49 (72)	0.04	0.17 (0.03, 0.93)
Not employed*	19 (50)	19 (28)		1.0
Alcohol abuse	3 (8)	22 (32)	0.009	0.18 (0.05, 0.65)
Drug abuse	2 (5)	18 (26)	0.01	0.15 (0.03, 0.70)
HIV positive[2]	0 (0)	2 (13)	NA	NA

* Not earns income, including unemployed, housewives, retired and disabled patients

Characteristics of TB disease by diabetes status

	DM+	DM-	P value[1]
Cough	36 (95%)	62 (91%)	0.50
Productive Cough	34 (89%)	57 (84%)	0.42
Hemoptysis	10 (26%)	14 (21%)	0.50
Fever/chills	26 (68%)	45 (66%)	0.81
Weight loss	26 (65%)	55 (81%)	0.15
Chest pain	6 (25%)	13 (30%)	0.65
Smear positive at diagnosis	34 (89%)	57 (86%)	0.64

Conclusions and thoughts…..

- TB patients with diabetes present a different socio-demographic profile that may delay TB diagnosis
  - Health professionals should “Think TB” when older females with DM present compatible symptoms, despite no other social risk factors
- Is the diabetes pandemic having an impact on the changing epidemiology of TB worldwide?
- Could progression to active TB have been prevented in these diabetes patients?