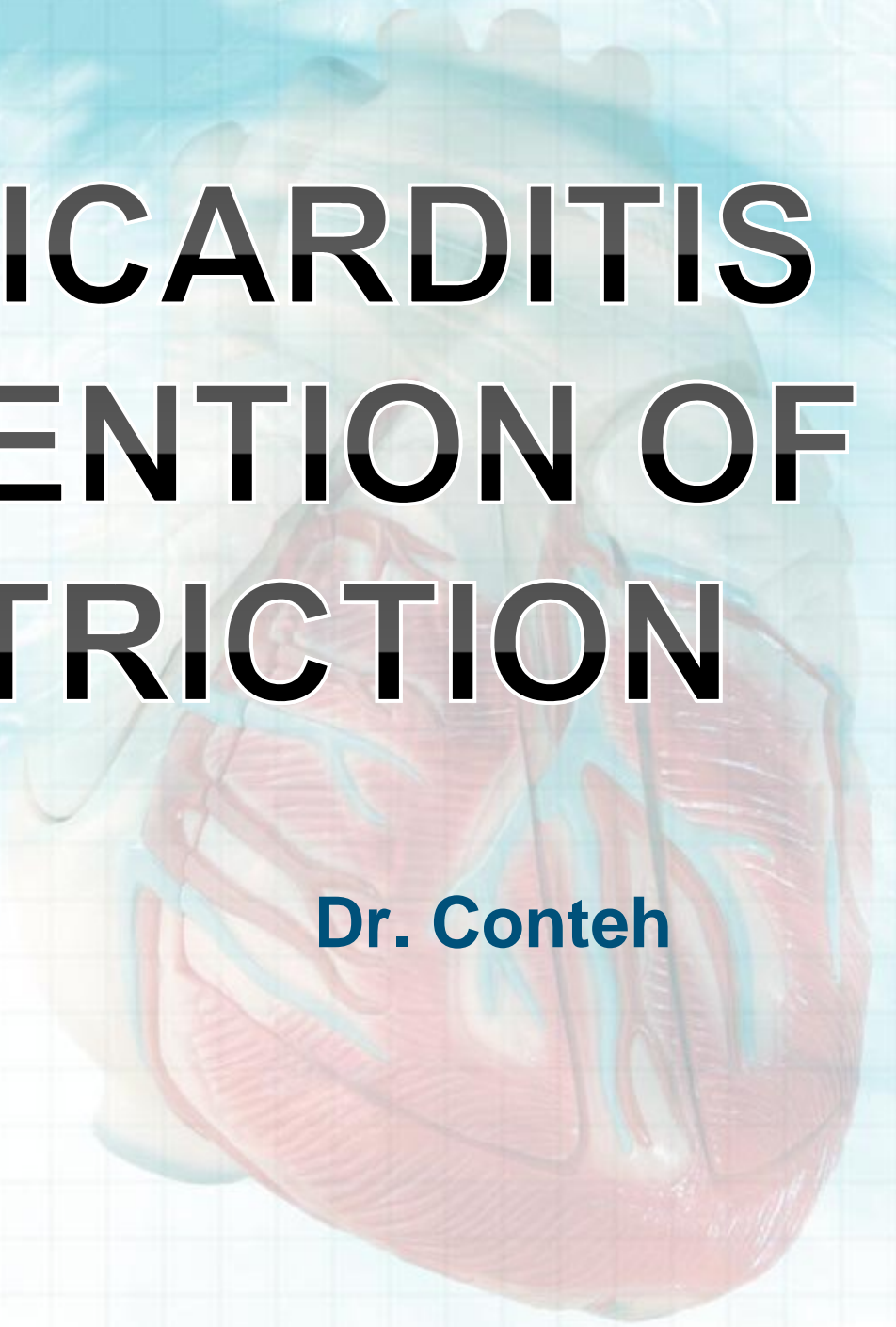
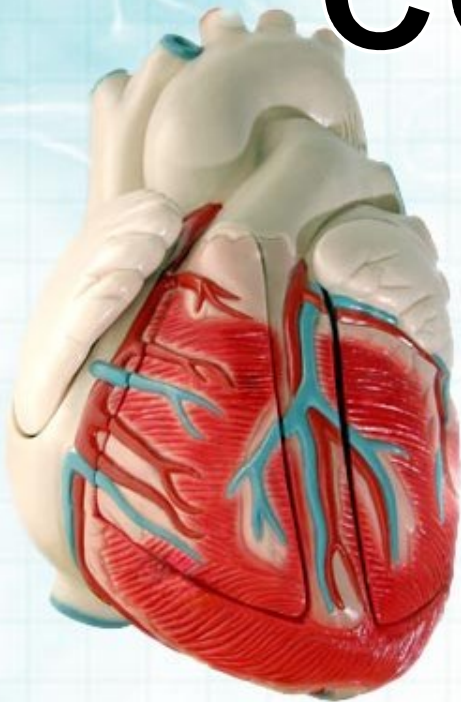


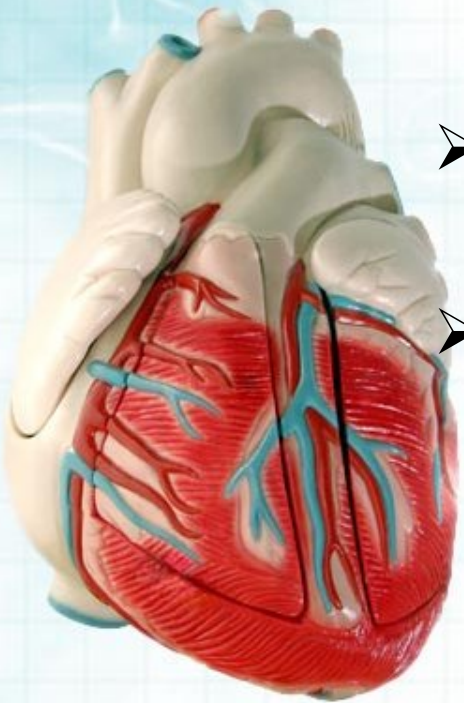
TB PERICARDITIS & PREVENTION OF CONSTRICTION

Dr. Conteh



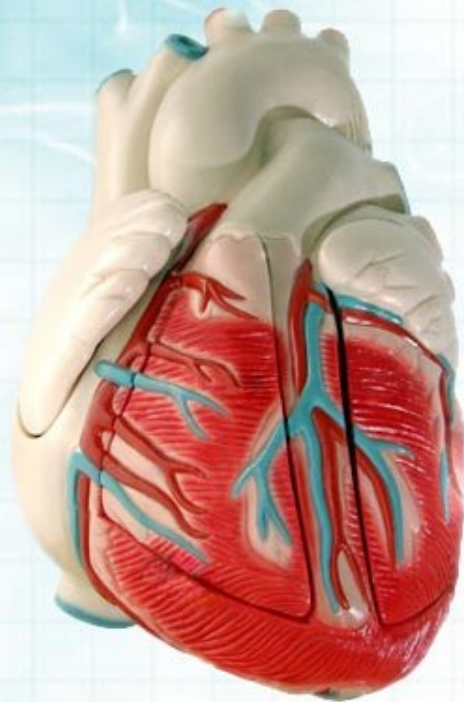
Objectives

- Highlight typical feature of TB pericarditis
- How to make a diagnosis
- How to treat TB pericarditis
- New evidence for adjunctive corticosteroid



Introduction

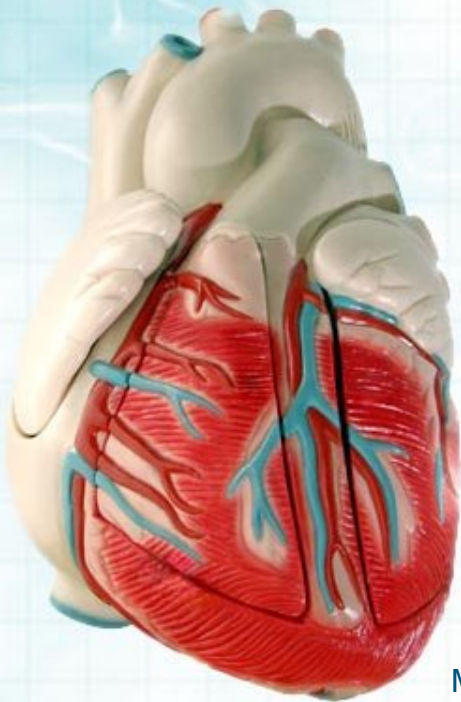
- ❖ TB pericarditis occurs in 1 to 2% of patients with pulmonary TB
- ❖ In developing countries with high prevalence of HIV there has been a dramatic increase in TB pericarditis
- ❖ TB is the cause of pericarditis in 70% non-HIV and 96-100% in HIV patients across Africa



1. Larrieu AJ et al Recent experience with tuberculous pericarditis. *Ann Thorac Surg* 1980; 29:464.
2. Reuter H, Burgess LJ, Doubell AF. Epidemiology of pericardial effusions at a large academic hospital in South Africa. *Epidemiol Infect.* 2005 Jun;133(3):393-9
3. Cegielski JP et al. Tb pericarditis in Tanzanian patients with and without HIV infection. *Tuber Lung Dis* 1994; 75:429.

Pathogenesis

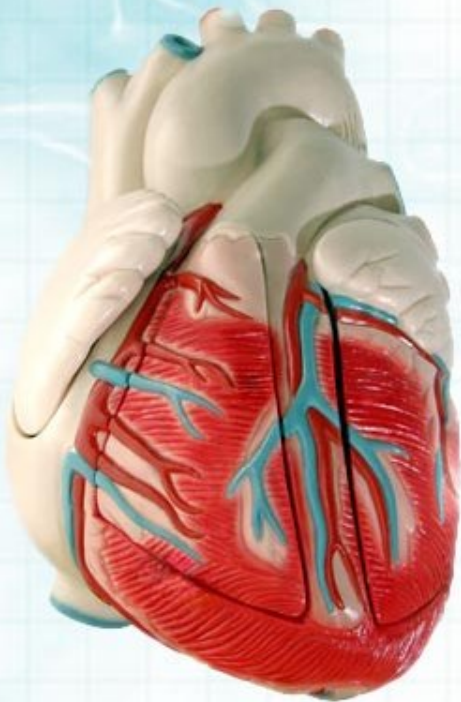
- ❖ Pericardial infection with *M. tuberculosis* occur via extension or via miliary spread
- ❖ Four pathological stages
 - ✓ Fibrinous exudation with PMN, abundant mycobacteria, and early granuloma
 - ✓ Serosanguineous effusion with lymphocytic exudate, high protein and low tubercle bacilli
 - ✓ Absorption of effusion with granulomatous caseation and pericardial thickening with subsequent fibrosis
 - ✓ Constrictive scarring; visceral and parietal pericardium contracts leading to constrictive pericarditis



Clinical Manifestations

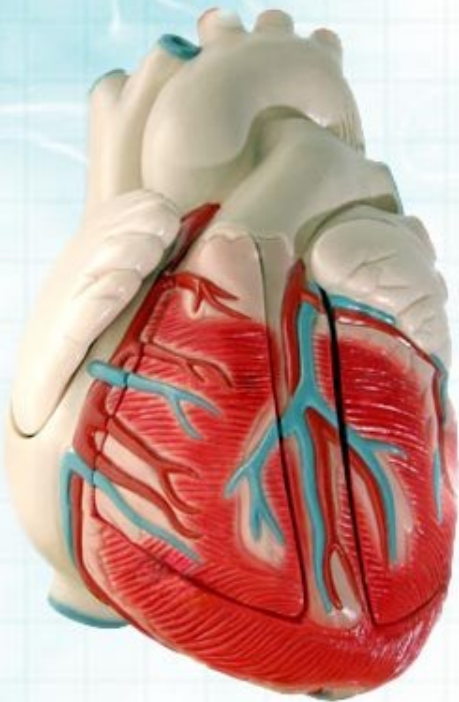
- ❖ Nonspecific symptoms precede cardiopulmonary complaints
- ❖ Symptoms depends on stage of infection, degree of extrapericardial dz, and pericardial involvement

- ❖ Fowler et al
 - ✓ Cough — 94%
 - ✓ Dyspnea — 88%
 - ✓ Chest pain (often pleuritic) —76%
 - ✓ Night sweats — 56%
 - ✓ Orthopnea — 53%
 - ✓ Weight loss — 48%



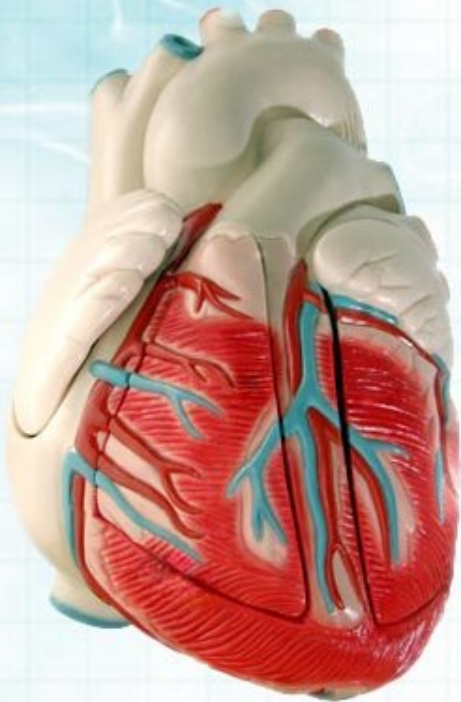
Physical findings

- ❖ Fever
- ❖ Tachycardia
- ❖ pericardial friction rub
- ❖ Distant heart sounds
- ❖ Raised JVP
- ❖ Hepatomegaly
- ❖ Ascites
- ❖ Peripheral edema



Initial Evaluation

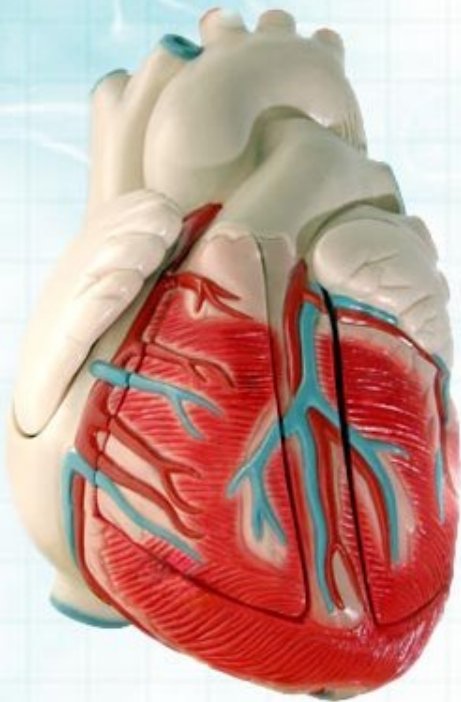
- ❖ Chest radiography
- ❖ Echocardiography
- ❖ Sputum AFB and culture
- ❖ Pericardiocentesis - warranted in many cases
- ❖ CT and/or MRI where available



Complications

- ❖ Cardiac tamponade
- ❖ Effusive constrictive pericarditis

- ❖ Constrictive pericarditis
 - ✓ occurs in 30 – 60% of patients, despite prompt antituberculous therapy and use of corticosteroids
 - ✓ Signs
 - Kussmaul's sign
 - Raised JVP with prominent Y descent
 - Pericardial knock



Sagristà-Sauleda J et al. Tuberculous pericarditis: ten year experience with diagnosis and treatment. J Am Coll Cardiol 1988; 11:724.

Diagnosis

- ❖ Established by detection of tubercle bacilli in smear or culture of pericardial fluid, and/or tubercle bacilli or caseating granulomata on histology of pericardium
- ❖ Likely TB Pericarditis: lymphocytic pericardial exudate with elevated ADA, TB demonstrated elsewhere and/or clinical response to antiTB therapy



1. Sagristà-Sauleda J et al. Tuberculous pericarditis: ten year experience with diagnosis and treatment. J Am Coll Cardiol 1988; 11:724

2. Mayosi BM, Burgess LJ, Doubell AF. Tuberculous pericarditis. Circulation 2005; 112:3608.

Tygerberg Index

Q J Med 2006; **99**:827–839
doi:10.1093/qjmed/hcl123

Original papers

QJM

Diagnosing tuberculous pericarditis

H. REUTER, L. BURGESS, W. VAN VUUREN and A. DOUBELL

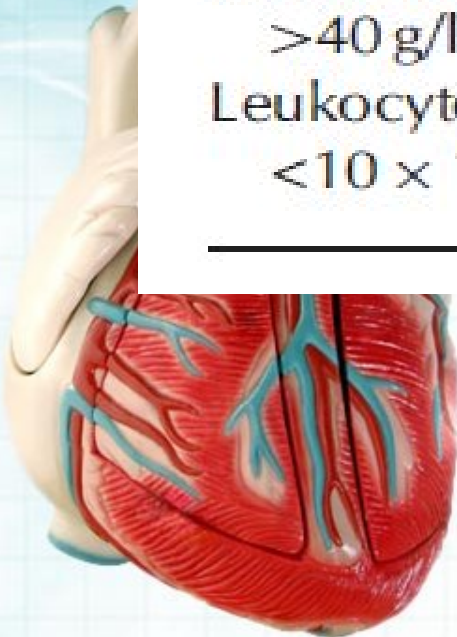
From the Cardiology Unit/TREAD Research, Tygerberg Hospital and Stellenbosch University, Parow, South Africa

Received 20 April 2006 and in revised form 22 August 2006

Table 3 Odds ratios and weighted diagnostic index for admission variables

Admission variable	Odds ratio	Weight	Diagnostic index
Weight loss	6.15	0.13	1
Night sweats	4.16	0.09	1
Fever	7.71	0.17	2
Serum globulin >40 g/l	15.09	0.33	3
Leukocyte count <10 × 10 ⁹ /l	12.76	0.28	3

Probable Tb pericarditis: score ≥ 6, sensitivity 86% and specificity 84%

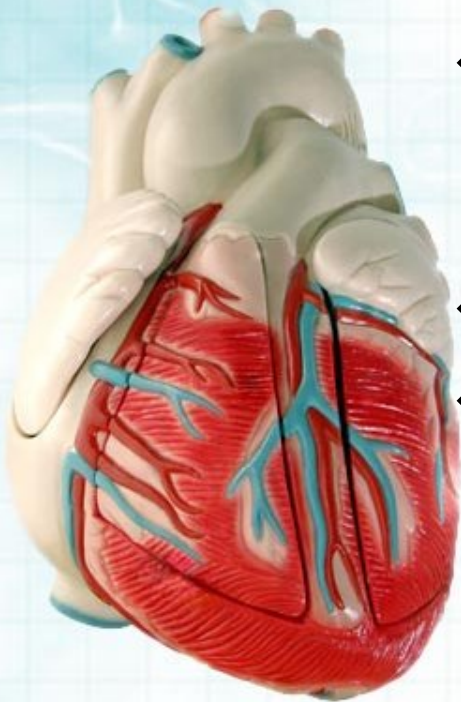


Other Tests

- ❖ Tuberculin skin test and interferon gamma release assay
- ❖ PCR for mycobacterial DNA

Diagnosis of Constrictive Pericarditis

- ❖ CXR – Pericardial calcification
- ❖ Echo – pericardial thickening, septal bounce, premature opening of PV, high E velocity, respiratory variation in ventricular filling
- ❖ Cardiac CT scan and MRI
- ❖ Invasive hemodynamic evaluation- occasionally needed to confirm dx



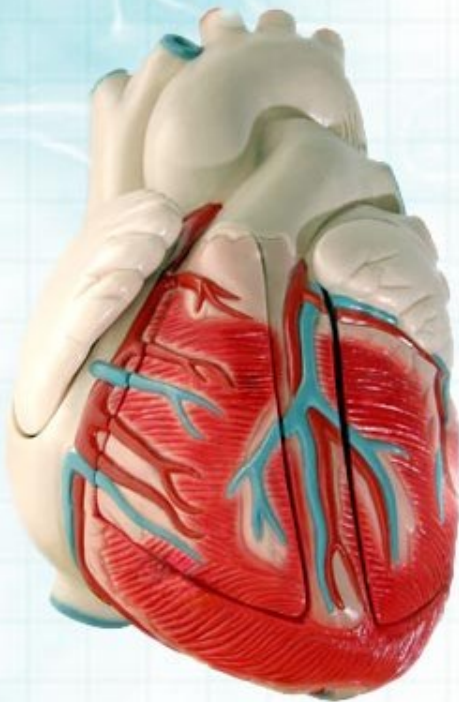
Treatment

❖ Anti TB therapy

- ✓ Same as that for PTB
- ✓ In TB endemic areas initiation of empiric antiTB therapy is appropriate prior to establishing a definitive dx

❖ Role of Corticosteroid

- ✓ Until recently very limited evidence for steroid in TB pericarditis
- ✓ Data demonstrated non-significant shorten of time to resolution symptoms, decrease reaccumulation of fluid and reduction of mortality



Dooley DP et al Adjunctive corticosteroid therapy for tuberculosis: a critical reappraisal of the literature. Clin Infect Dis 1997; 25:872.

Guidelines on Corticosteroid in TB Pericarditis

❖ 2003 guidelines by ATS/CDC/IDSA

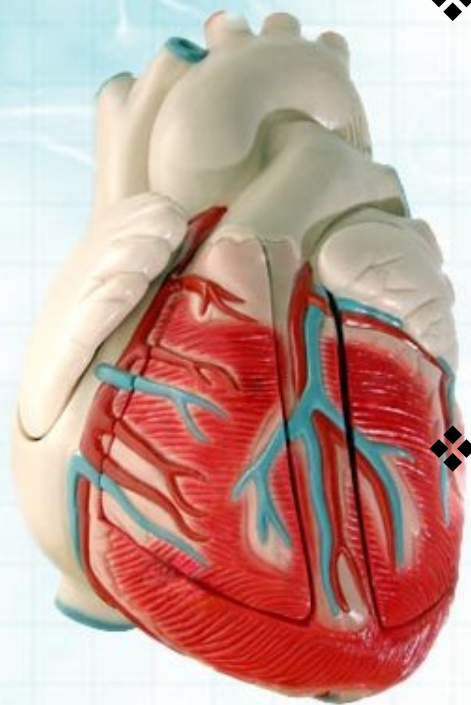
- For adults prednisone 60 mg/day (equivalent prednisolone) for 4 wks, followed by 30 mg/day for 4 wks, 15 mg/day for 2 wks, and 5 mg/day 1 wk

❖ 2004 guidelines of ESC

- Prednisone should be administered in relatively high doses (1–2 mg/kg/day) for 5-7 days, since rifampicin induces its liver metabolism.
- Progressively reduce to discontinuation in 6–8 wks

❖ WHO 2010

- Unless drug resistance is suspected, adjuvant corticosteroid is recommended for TB meningitis and pericarditis



IMPI Trial

- ❖ To evaluate efficacy and safety of adjunctive prednisolone and *M. indicus pranii* in patients in Africa with TB pericarditis

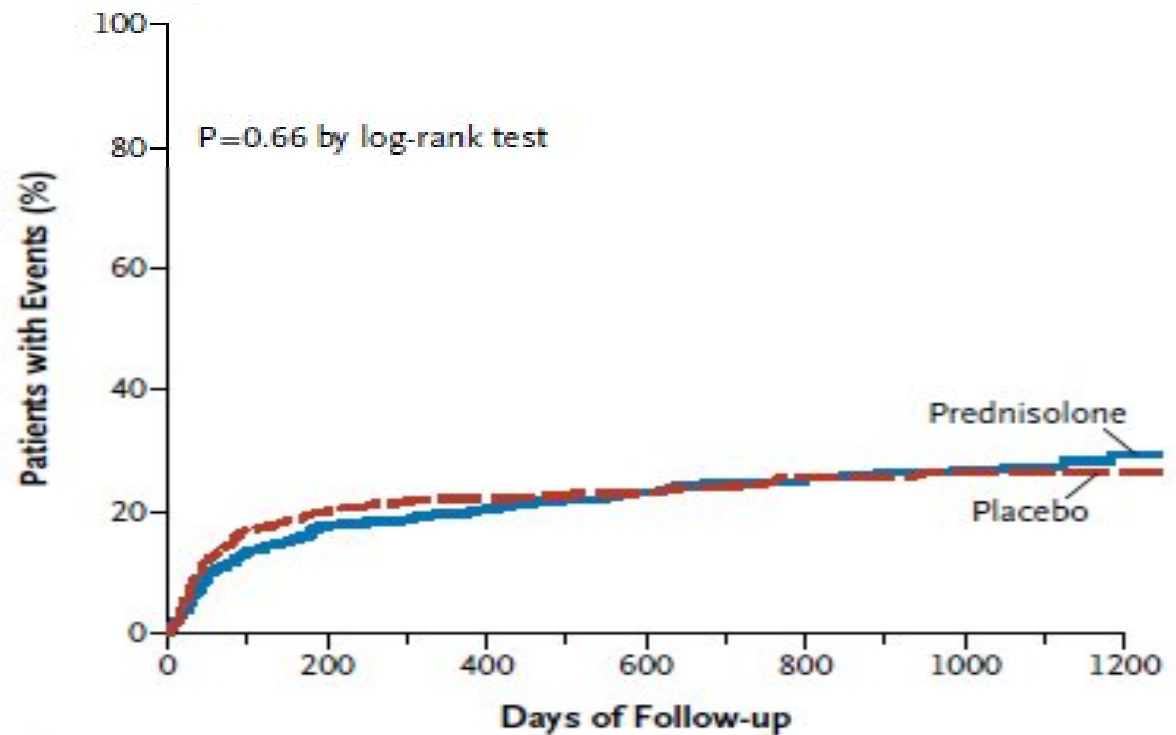
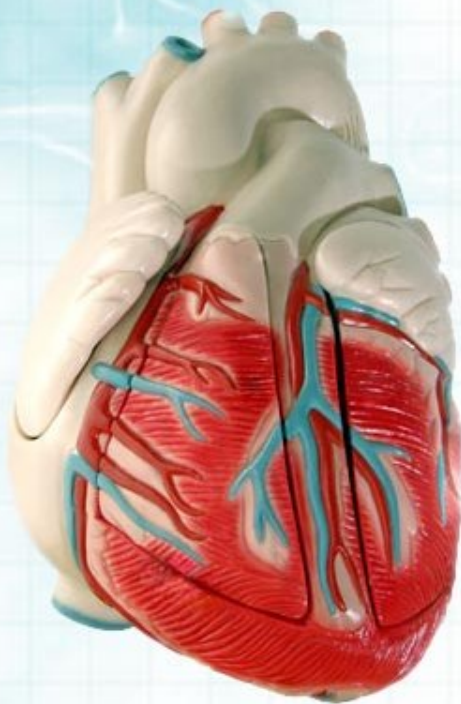
The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Prednisolone and *Mycobacterium indicus pranii* in Tuberculous Pericarditis

B.M. Mayosi, M. Ntsekhe, J. Bosch, S. Pandie, H. Jung, F. Gumedze, J. Pogue, L. Thabane, M. Smieja, V. Francis, L. Joldersma, K.M. Thomas, B. Thomas, A.A. Awotedu, N.P. Magula, D.P. Naidoo, A. Damasceno, A.C. Banda, B. Brown, P. Manga, B. Kirenga, C. Mondo, P. Mntla, J.M. Tsitsi, F. Peters, M.R. Essop, J.B.W. Russell, J. Hakim, J. Matenga, A.F. Barasa, M.U. Sani, T. Olunuga, O. Ogah, V. Ansa, A. Aje, S. Danbauchi, D. Ojji, and S. Yusuf, for the IMPI Trial Investigators*

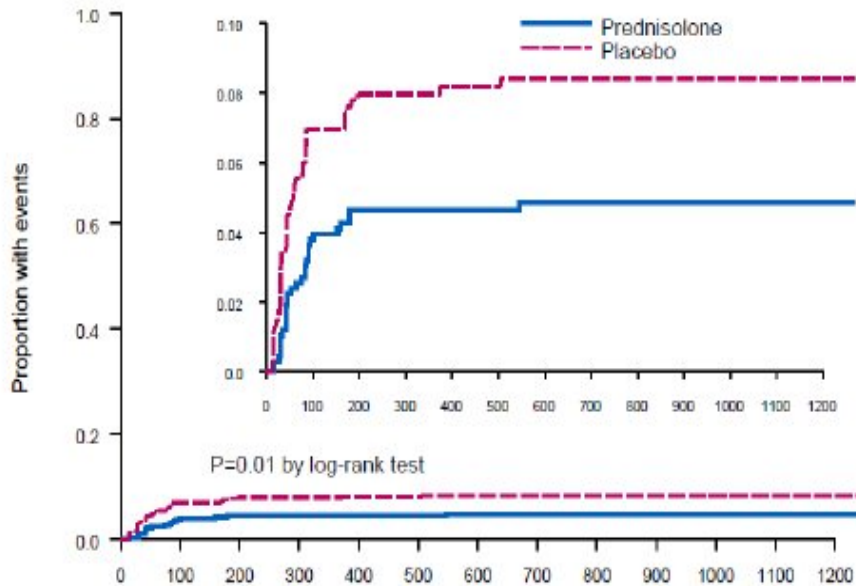
- ❖ **Steroid dose:** 120mg/day for 1wk, weekly taper to 90mg,60mg,30mg,15mg and 5mg
- ❖ **Primary end point:** Composite of death or first occurrence of cardiac tamponade requiring pericardiocentesis or constrictive pericarditis



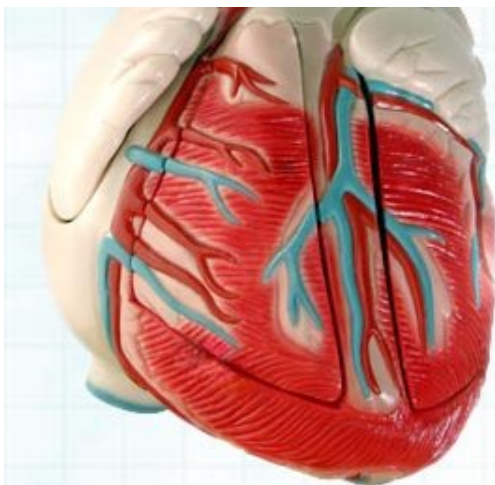
No. at Risk

Prednisolone	706	600	511	502	426	418	335	306	186	182	106	65	60
Placebo	694	572	487	473	404	395	316	289	185	181	111	84	73

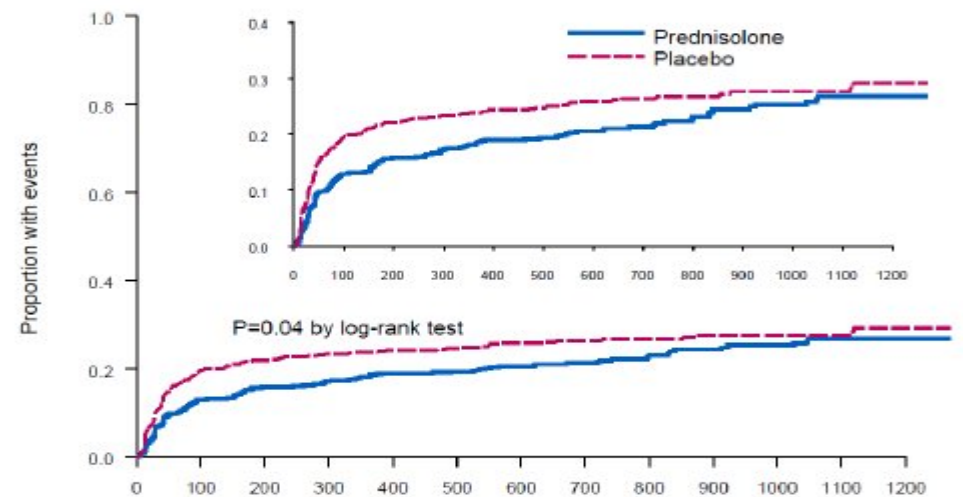
Constrictive pericarditis



No. at Risk	Days of Follow-up										
	0	100	200	300	400	500	600	700	800	900	1000
Prednisolone	706	610	519	510	434	426	344	314	193	189	111
Placebo	694	589	503	488	417	408	327	299	192	188	116



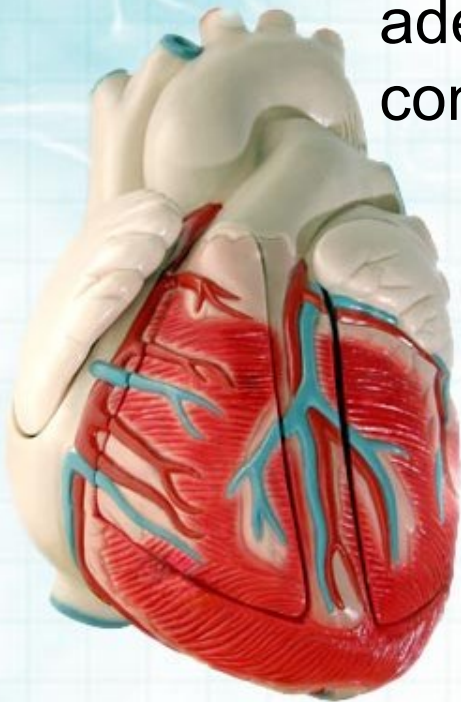
Hospitalisation



No. at Risk	Days of Follow-up												
	0	100	200	300	400	500	600	700	800	900	1000	1100	1200
Prednisolone	706	574	485	469	396	388	311	285	171	166	94	59	54
Placebo	694	529	453	436	367	357	286	258	165	163	101	74	63

Conclusion

- ❖ TB pericarditis associated with significant morbidity and mortality
- ❖ High index of suspicion for diagnosis
- ❖ Simple and effective clinical index for diagnosis
- ❖ Early diagnosis, prompt initiation of anti-TB and adequate dose of corticosteroid prevents constrictive pericarditis and reduce mortality



THANK YOU