Clinical Scenarios In Childhood TB

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U E R M M M C

Objectives:

- To present different commonly encountered clinical scenarios in childhood TB
- To discuss the mode of management for each

Present Regimen

I. Basis for Cure

" …in children (with Tb), the response to treatment is best assessed clinically."

Standard 10 (standard for treatment)

Int'l Stds for TB Cure (ISTC)

January 2006

A. Clinical Evaluation

I. History

* improvement of appetite and well being
* weight gain
* disappearance of signs and symptoms

(use as basis for diagnosis)

= cough of 2 weeks or more

= fever of 2 weeks ore more

2. PE

- General survey
- Appearance of skin
- Sclerae
- Lungs
- Liver, spleen, lymph nodes

B. Radiographic Evaluation

- Pulmonary infiltrates usually clear in 2-9 mos (Tsakilidis D, et al, PIDJ 1992; Strake JR, PIDJ 1990; Abernath et al, Pediatrics, 1983)

- Hilar adenopathy may take 2-3 years to finally disappear after effective treatment. (Tsakilidis D, et al, PIDJ 1992; Abernath et al, Pediatrics, 1983; Strake JR, PIDJ 1995)

- TB pleurisy resolves in 6-12 weeks of anti-TB treatment (Tani P et al, Acta Tubercle Scand 1964; Lee CH, et al. chest 1998)

- The hyperaeration observed in patients with endobronchial tuberculosis improves as early as 3 weeks of treatment (Insel man LS, Kendig EL Jr. Tuberculosis Disorders of the Resp Tract, 5th ed, 1990)

C. Bacteriologic Evaluation

Standard 10

All patients should be monitored for responses to therapy, best judged in patients with pulmonary tuberculosis by follow-up sputum microscopy (2 specimen), at least at the time of completion of the initial (intensive) phase of treatment (2 months) at 5 months and at the end of the treatment.

Int'l Standards for TB Care (ISTC) Jan 2006

II. Significance of Persistent Adenopathy

A. Clinical

* development of tuberculin hypersensitivity within 3-12 weeks after initial infection

enhances cellular reaction (primary complex regional lymph nodes)

spread to the lymphatic chains

- Lymph node TB: most common extra pulmonary manifestation of TB
  - predominantly cervical
  - R & L paratracheal chain

- Lymphatic drainage of the lungs occurs from the left to right

  ↓

  R paratracheal area: mostly affected

Tb Lymphadenopathy

- Insidious onset, painless
- Initially, the lymph nodes are discrete & firm, later becoming matted together & fluctuant.
- Overlying skin may break down with formation of abscesses and chronic discharging sinuses, which heal with scarring(scrofuloderma).

B. Radiographic

Hilar Lymphadenopathy: most common chest radiograph finding in childhood TB: 83-92% of cases (Kim WS et al, AVR April 1997; Leung AN, et al; Radiology Jan 1992; Level III)

Enlargement of hilar adenopathy

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Bronchial obstruction (wheezing)

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* Sudden death by asphyxia
* Obstructive hyperaeration
* Segmental ateletasis

Treatment:

- Anti-TB medications
- Corticosteroids: 1-2 mg/kg/day x 2-4 weeks

Tb Lymphdenopathy

- Dx: Biopsy
- Yield of the biopsy:

  AFB smear : 25-50% Huhti E., Tubercle 56, 27-36

  Culture: 60-70% Citron K, Oxford Txt Med 5

  Fine needle aspiration cytology: 71-83%

  Dandapat MC et al, Br J Surg., 771, 911-12

  Lau SK et al, Aust NZ J Surg 58, 947-50

  Shaha A et al. Am J Surg 152, 420-3

- Differential diagnoses: lymphoma, CA mets, sarcoidosis, fungal infections

III. Treatment Failure

A patient who is initially smear positive and who remained smear positive at month 5 or late during treatment

(Global Control of TB 2007 WHO)

IN CHILDREN:

- Lack of clinical improvement despite adequate triple therapy for at least 2 months (2 HRZ/4 HR)
- Progression of clinical symptomatology, radiologic findings despite adequate therapy

National Consensus on chilhood Tuberculosis 1997

- Cured – a patient who was initially cured, smear (+) & was smear (-) in the last month of tx and or at least one previous occasion
- Relapse case – A px previously declaired cured but with a new episode of bacteriologically (+) (sputum smear or culture) tuberculosis
- Re- tx case – A px previously treated for TB, undergoing tx for a new episode, usually bacteriologically (+) TB

Recommended treatment regimens for children in each TB diagnostic category

TB Dx category	TB cases	Regimen	
		Intensive phase	Continuation phase
III	-New smear (-) PTB (other than category 1) - less severe forms of extrapulmonary TB	2HRZ	4HR or 6HE
I	-new smear (+) PTB - new smear (-) PTB with extensive parenchymal involvement - severre forms of extrapulmonary TB (other than TBM) - severe concomitant HIV dse	2HRZE	4HR or 6HE
I	TBM	2RHZS	4RH
II	Previously treated smear (+) PTB: relapse tx tx after interruption tx failure	2HRZE/1HRZE	5HRE
IV	- Chronic and MDR-TB	Specifically designed standardized or individual regimens	

WHO 2006 Guidance for NTP of Mgt of TB in children

Drug resistant TB

1. Failure in the source case suggestive of drug resistant TB.
- Contact with an known case of drug resistant TB
- Remains sputum smear (+) after 3 months of tx
2. Failures of children suspected of having drug resistant TB
- Contact with an known case of drug resistant TB
- Not responding to the anti-TB tx regimen
- Recurrence of TB after adherence to tx

WHO 2006 Guidance for NTP of Mgt of TB in children

Second-line anti-TB drugs for Tx of MDR-TB in children

Drug	Mode of Action	Common Side effects	Recommended Daily dose	
			Range (mg/kg)	Maximum (mg)
Ethionamide or Prothonamide	Bactericidal	Vomiting, GI upset	15-20	1000
Fluoroquinolones		Arthropathy, arthritis		
Ofloxacin	Bactericidal		15-20	800
Levofoxacin	Bactericidal		7.5-10	-
Moxifloxacin	Bactericidal		7.5-10	-
Gatiffloxacin	Bactericidal		20-30	1500
Ciprofloxacin	Bactericidal			
Aminoglycosides		Ototoxicity, hepatotoxicity		
Kanamycin	Bactericidal		15-30	1000
Amikacin	Bactericidal		15-22.5	1000
Capreomycin	Bactericidal		15-30	1000
Cycloserine or teriszidone	Bacteriostatic	Psychiatric, neruological	10-20	1000
Para-Aminosalisylic acid	Bacteriostatic	Vomiting, GI upset	150	12,000

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Multi-drug resistant TB

- Do not add a drug to a failing regimen
- Treat the child according to drug susceptibility pattern of the source case's M.tb strain if an isolate from a child is not available
- Use at least 4 drugs certain to be effective
- Use daily tx only; DOT is essential
- Counsel the child caregiver at every visit
- Follo up is essential: clinical, radiological and bacteriological
- Tx duration depends on the extent of the disease, in most cases will be 12 months or more (or at least 12 months after the last (+) culture)

WHO 2006 Guidance for NTP of Mgt of TB in children

- Anti-Koch’s meds after a drug induced hepatitis
- Allergic to anti-Koch’s regimen