TOPIC OF INTEREST

PRIMARY COMPLEX

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1. What is primary complex?

A primary complex (PC) is a localised lesion formed due to the reaction of the body tissues to the first exposure to tubercle bacilli. The lung is the most frequent site of primary infection. Inhaled bacilli get implanted in the periphery of the lung where a "tubercle" is formed. Initially the response consists of an accumulation of polymorphs, followed by macrophages and 4-6 weeks later lymphocytes appear in large numbers. The bacilli also spread to the draining hilar lymph nodes where the same changes occur. The lesion at the point of entry and that in the node together form the primary complex.

2. Is there hematogenous spread of bacilli?

At the time of primary infection, bacilli are carried in the blood to all parts of the body. Tubercles form and heal in many different parts of the body.

3. When should you suspect primary complex in a child?

You should suspect primary complex whenever a child has two or more of the following symptoms, especially when they do not respond to a course of broad spectrum antibiotics:

Irregular fever
Loss of weight/Failure to gain weight
Anorexia
Repeated respiratory infections.

The supporting criteria are a positive tuberculin test, a positive family history of tuberculosis, a history of measles or pertussis prior to the illness, malnutrition. localised lymphadenopathy and no previous immunisation with BCG. The Chest Xray may show a parenchymal lesion, enlargement of the hilar or mediastinal lymph nodes or both. In young children, thymic enlargement or sterna1 centres of ossification may mimic hilar lymphadenopathy. One should not confuse normal pulmonary vascular markings at the hilum for lymph nodes. Persistence of a parenchymal lesion for more than 2 to 3 weeks is suggestive of tuberculous infection.

4. What is the role of the Mantoux test?

The Mantoux test if properly done and interpreted is useful in the diagnosis. It takes 6-8 weeks after primary infection for tuberculin sensitivity to appear. The standard dose is 1 TU of PPD tuberculin RT 23 with Tween 80 – the largest diameter of induration is measured after 48-72 hours. If it is more than 10 mm it means the child has been infected by tubercle bacilli at some time. Priorvaccination with BCG or exposure to environmental non tuberculous Mycobacteria might also give a positive test but the induration in such cases is usually less than 10 mm. A Mantoux reading more than

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20mm is highly suggestive of tuberculosis.

5. Can a child have primary complex even with a negative Mantoux result?

Yes, the Mantoux test may be negative (< 10 mm) for a number of reasons even if the child is infected with TB. These are measles, malnutrition. steroid treatment, HIV infection, improper technique. overwhelming infection eg meningitis or miliary TB and the incubation period of primary infection before tuberculin sensitivity has developed.

6. Can you confirm the diagnosis of PC?

The only definitive proof is demonstration of Mycobacterium tuberculosis in smear/culture from sputum or early morning gastric aspirate. This yields positive results only 30% of the time even under ideal circumstances. In a child who is not very sick. no harm is done by giving nonspecific treatment and waiting for about 2 to 3 weeks for the response. Only those children who do not respond may be considered to have primary complex. In this way, overdiagnosis can be avoided to a large extent and one can avoid unnecessary treatment with potentially hepatotoxic drugs.

7. What is the course of Primary Complex?

PC can evolve in one of the following ways:

1) In most children, the body is able to contain the infection and the lung lesion usually heals and calcifies without causing symptoms. However, a few bacilli may remain dormant and cause disease in adult life (endogenous reactivation). Primary complex is usually not a life threatening illness and only 6% of children infected develop secondary complications in the next five years.

2. Local complications: When the host resistance is low, the degree of caseation in the primary lesion and lymph nodes is more and this can lead to a variety of complications collectively called the "progressive primary complex". This includes collapse. consolidation, tuberculous bronchopneumonia, cavitation and coin shadows. In addition, the primary focus can rupture into the pleural or pericardial sacs causing pleural or pericardial effusion respectively.

3. Disseminated disease: In the course of the primary infection, if large numbers of bacilli are discharged into the blood stream and if host immunity is low eg. due to malnutrition, young age or measles, then serious complications like miliary or meningeal TB may follow.

8. How do you treat a child with PC?

The objective of treatment of PC is to remove the danger of hematogenous dissemination and over time to kill bacilli in the primary complex or any small subclinical lesions which have formed. The ideal treatment should be effective, simple, nontoxic and cheap.

In this situation, isoniazid (INH) is the most important drug and should be given daily for at least 6 to 9 months. Since the incidence of primary INH resistance in parts of India now approaches 25 to 30%, it is wise to give 2 or preferably 3 drugs in the initial phase. Some recommended regimens are given below:

2RHZ/ 4RH (2 months of Rifampicin l0mg/kg, INH 10mg/kg and Pyrazinamide 30mg/kg followed by 4 months of Rifampicin and INH given daily)

2REH/ 4RH or 7EH (2 months of Rifampicin 10mg/kg, INH 10mg/kg and Ethambuto1 20mg/kg followed by 4 months of Rifampicin and INH or 7 months of INH and Ethambutol respectively).

Intermittent drug regimens are also highly effective but are not advisable unless they can be supervised. It is very important to give the drugs regularly, as a single dose and for a minimum duration of 6 months.

9. How do you treat a child with a positive Mantoux test and a normal Chest Xray?

This depends on the age of the child. A child who is less than five years old has a higher chance of developing serious disease and therefore needs chemoprophylaxis. This is usually with Isoniazid 5mg/kg/day for at least 6 and preferably 12 months. The risk of miliary and meningeal spread is less in children over five years and one can therefore wait and observe the child. Though chemoprophylaxis is not usually recommended over the age of five years, it may be given if follow up is not possible or if the child is in contact with an open case of tuberculosis.

References

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