Original Article

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Opportunistic Infections among HIV Positive Children

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Abstract

Introduction: Opportunistic infections are generally seen in children with severe depression of the CD4 count. Young children generally have primary infection and, lacking prior immunity often have a more fulminant course of disease. The peak incidence of PCP occurs at age 3–6 months with the highest mortality rate in children <1 year of age. *Methods:* All the children who fit to inclusion criteria were clinically evaluated and investigated. Data was collected by using a pre tested semi structured questionnaire. *Results:* All the 24 symptomatic children experienced weight loss and fever, making them the most common symptomatology. *Conclusion:* Oral thrush (fungal), diarrheal disease and tuberculosis predominated the picture in the HIV positive children of this region.

Keywords: HIV; Opportunistic Infections; Children.

Introduction

Pediatric HIV infection has emerged as an important public health problem in industrialized and developing nations. The first children with AIDS were described in 1983. Less than 2 decades later, the global HIV epidemic is having a profound effect on the health and survival of children. Almost all HIV infections among young children are caused by mother-to-child transmission.

Major advance in the understanding of the timing and pathogenesis of perinatal HIV infection have occurred in recent years raising a new hope for prevention of perinatally acquired HIV infections.

The most dramatic prevention breakthrough occurred in February 1994, where the result of pediatric AIDS clinical trial group (PACTG) protocol 076 demonstrated that the risk for MCT could be decreased from 25.5% to 8.3% by treating mothers and neonates with ZDV [1].

Most HIV infected children are born in the developing world, and a crucial challenge is to identify safe and effective interventions that are feasible in countries with the most significant HIV burden. Because of it high complexity and cost, the 076 regimen has not been implemented in most developing countries.

Opportunistic infections are generally seen in children with severe depression of the CD4 count. Young children generally have primary infection and, lacking prior immunity often have a more fulminant course of disease. The peak incidence of PCP occurs at age 3–6 months with the highest mortality rate in children <1 year of age [2].

The classic clinical presentation of PCP includes acute onset of fever, tachypnea, dyspnea, and marked hypoxemia; however in some children more indolent development of hypoxemia may precede other clinical or roentgenographic manifestations. Chest radiography findings most commonly consist of interstitial infiltrates or diffuse alveolar disease, which rapidly progresses. Nodular lesions, streaky or lobar infiltrates, or pleural effusions may occasionally be seen. Diagnosis is established by demonstration of P. carinii with appropriate staining of bronchoalveolar fluid lavage; rarely, an open lung biopsy is necessary.

Interruption of perinatal transmission from mother-to-child has been achieved by administering ZDV chemoprophylaxis to the pregnant woman. A clinical trial in the USA and France (PACTG 076)

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showed that, in the absence of breast feeding, zidovudine given orally 5 times per day to HIV-1 infected pregnant women starting at 14-34 weeks gestation, intravenously during labour, and orally to babies for 6 weeks, lowered the risk for perinatal HIV-1 transmission by two third [1]. However, this regimen could not be implemented in developing countries like Africa and India, because of the cost and complexity [3]. A number of studies were conducted from then on for developing countries using short course regimens. One such regimen is single dose 200 mg tablet of nevirapine given to the mother during labour and single dose 2 mg/Kg body weight nevirapine suspension (50 mg/ 5 ml) to the baby within 72 hours which showed a 50% reduction in the transmission with breast feeding continued [4,5].

Methodology

A Prospective longitudinal Cohort study was carried out considering the children with the following criteria

- Children above 18 months of age admitted into the pediatric ward with unexplained illness.
- Children born of known HIV positive parents; above 18 months of age.

This study was carried out at a tertiary care hospital. The data collected was entered in excel and analyzed as Proportion

Investigation

- Thorough Clinical Examination
- Blood samples obtained by peripheral venipuncture for analysis of Hemoglobin percentage, Total count, Differential count, ESR, Blood culture,TRIDOT.
- Cerebrospinal fluid examination in children suspected of meningitis, obtained by sterile lumbar puncture for: Total count, Differential count, Gram staining, Ziehl-Nielsen Staining, KOH staining, Gram staining, KOH Staining, In cases of suspected pneumonia, Chest Roentgenogram for evidence of pneumocystis carinii and fungal infection.

Results

A total number of 3(5%) parents were having co-existing sexually transmitted disease in addition to HIV. One lady had donovanosis, one couple had co-existing gonorrhea.

Table 1: Other symptomatology

Symptoms	No.	Percent
Fever	24	100.00
Weight Loss	24	100.00
Anemia	15	62.50
Lymphadenopathy	14	58.30
Diarrhea	10	41.60
Hepatosplenomegaly	10	41.60
Rash	09	37.50
Cough	08	33.30
Pleural effusion	03	12.50
Ear discharge	02	8.30
Ascites	01	4.20

All the 24 symptomatic children experienced weight loss and fever, making them the most common symptomatology. The other common predominant symptomatology recorded in the present study are anemia in 15 children (62.5%), lymphadenopathy among 14 children (58.3%), hepatosplenomegaly and diarrhea in 10 children each (41.60%).

Table 2: Comparative studies

Criteria	Niu et al (%)	Present study (%)
Fever	96.00	100.00
Rash	70.00	37.50
Diarrhea	32.00	41.60
Hepatosplenomegaly	14.00	41.60
Adenopathy	74.00	62.05

Comparative study with Niu et al showed almost comparable results for fever (96% versus 100%). Diarrhea (32% Vs 41.6%) and adenopathy (74% versus 62.5%).

Table 3: Opportunistic Infection among HIV Positive Children (n=24)

	No.	Percent
Oral thrush	16	66.60
Tuberculosis	12	50.00
Meningitis	03	12.50
Viral Disease	02	08.30
Retinitis	01	4.10

From the above data, it can be concluded that oral thrush predominated as the most common opportunistic infection in the present study with a total 16 cases (66.6%) followed broncho pneumonia in a total of 7 cases (29.1%). The other common opportunistic infection observed were meningitis, tuberculosis and retinitis in 3 cases each (12.5%). Two children in the present study had other co-existing viral disease (8.3%), among this one child had disseminated varicella infection.

Discussion

As we review the most common opportunistic infections and their clinical presentation in this study, several principles are worthwhile to consider:

1. A broad and inclusive differential diagnosis is important to develop when approaching opportunistic infections in children.
2. Efforts should always be made to obtain tissue and fluid specimens to establish a definitive diagnosis.
3. In the light of advances in treatment and prophylaxis, new and unusual manifestations of common clinical syndromes may arises.

The most common opportunistic infection that manifested itself in this study was oral thrust (due to Candida albicans). Severe oral candidiasis was often the first clinical indication of HIV infection in the children who were part of this study. Oral candidiasis manifested itself in several forms [6,7].Thrush or Pseudomembranous Candidiasis is the most common form of oral candidiasis in children diagnosed by our study. Creamy, white lesions are found on the oropharyngeal mucosa, palate and tonsils. Angular Cheilitis Present as red, fissured lesions at the corner of the mouth. Whatever the presentation, diagnosis is usually clinical, children complaining of discomfort and of a burning sensation or difficulty in swalloging. Treatment modalities include clotrimazole oral paints or suspension, fluconazole tablets or suspension, etc.

Diarrhea was the next common manifestation of opportunistic infection in our study. Children who were HIV positive and symptomatic with diarrhea often had other non-specific complaints like abdominal pain, anorexia and fever. Stool culture in patients with diarrhea of this study reported no bacterial growth. Viral culture was not done due to non-feasibility. However, it can be assumed that diarrheal disease in children of this study was of viral etiology. Similar findings were reported by Drew WL et al ion 1992 [8].

Three children who were part of this study had bacterial meningitis. One child had tubercular meningitis and the other two children with meningitis had hemophilus isolated from their C.S.F. However, all three children presented with high grade fever, neck stiffness and convulsions. One child with pyogenic meningitis was also found to have retinitis consistent with CMV disease. Fundoscopy revealed a yellowish white area of retinal necrosis with perivasclar exudates and hemorrhage at the periphery of the fundus [9,10]. The child with tubercular meningitis recovered with focal neurologic deficit namely left sided hemiparesis and ipsilateral VII cranial nerve palsy.

Eight (8) children of this study had cough and 4 children also had breathlessness. 3 children had unilateral massive pleural effusion consistent with findings of tuberculosis. Diagnosis of pneumocystis carinii pneumonia could not be made during this study due to the non-compliance of the subjects and consent not given by their parents to broncho-alveolar lavage to obtain samples to detect pneumocystic carinii [11]. Two children presented with cough, shortness of breath and progressive hypoxemia. Chest radiographs revealed diffuse interstitial infiltrates in these two children which is consistent with the clinical and radiographic findings of pneumocystis carinii pneumonia [12]. One child of this study had severe, chronic chicken pox. Initial lesions were generally the characteristic vesicles of varicella-Zoster but over time they evolved into hyperkeratotic verrucous lesions. This was consistent with the finding of Srugoet al [13].

Conclusion

The opportunistic infections that occurred in children who were part of this study are in

concurrence with the already available data of previous studies.

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