

CLINICAL PRESENTATION OF LIPOID PNEUMONIA AMONG CHILDREN

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ABSTRACT

Background: The traditional medicinal use of different fat based remedies for the relief of various common childhood ailments continues to be a public health problem. **Objective:** To determine the clinical profile of the patients of lipoid pneumonia in Sheikh Zayed Hospital, Rahim Yar Khan. **Patients & Methods:** This descriptive study was conducted at the department of Pediatrics, Sheikh Zayed Hospital/ Medical College, Rahim Yar Khan. The study period was 02 years, from 1st January 2010 to 31st December 2011. All the patients presented to the department during the study period and diagnosed as lipoid pneumonia were included in the study. In all suspected patients of lipoid pneumonia a detailed history focusing mainly on birth history, feeding history including intake of any oil, ghee, butter and complaints of respiratory system was focused. Thorough physical examination particularly of respiratory system and CNS was carried out. Investigations carried out were CBC, Blood C/S, x-ray chest and CT scan chest. **Results:** During the study period of 02 years, 22 (0.0006%) cases of lipoid pneumonia were diagnosed on clinical and radiological grounds. In all cases birth history was unremarkable and all patients were developmentally normal. Acute presentation with high grade fever, cough and respiratory distress was noted in 05 (22.7%) cases while the onset was insidious with persistent or recurrent respiratory symptoms in 17 (77.2%) cases. The time interval between aspiration and presentation was <24 hours in 01 (4.5%) case, 2-7 days in 04 (18.2%) cases and >7 days to months in 17 (77.2%) cases. Daisee Ghee was administered in 16 (73%) cases, Castor Oil in 04 (18%) cases while Gingilli oil and olive oil in 01 (4.5% each) case each. **Conclusion:** Lipoid pneumonia be considered in the differential diagnosis of all cases of respiratory distress more particularly of chronic/recurrent respiratory symptoms especially if there is suboptimal response to antibiotics. There is need for the anticipatory education of health care professionals, who then can counsel parents and caregivers of young children to avoid oil/ghee administration and hence to avoid this easily preventable but potentially life threatening condition of lipoid pneumonia. Moreover, the involvement of media and other health agencies can also be rewarding.

Key Words: lipoid pneumonia, persistent pneumonia, recurrent pneumonia, fat based remedies.

INTRODUCTION

Lipoid pneumonia is a form of pneumonia caused by the aspiration of fatty substances. These fatty substances include animal fats, vegetable oils and mineral oils.¹ The commonly used animal fats are ghee, butter and cod-liver oil, vegetable oils include olive oils, gingili oil, mustard oil, castor oil, coconut oil and neem oil while liquid paraffin is the most commonly used mineral oil. Though the practice of using different oils as folk remedies for the treatment of various childhood ailments is known since many centuries, however, the presence of lipids in the lungs of patients who received mineral oils as nasal drops or laxatives was first described in 1925 by Laughlen.² Since then, there have been numerous reports and reviews of the condition now referred to as exogenous lipoid pneumonia. Review of literature

reveals that lipoid pneumonia is common in countries where cultural practices encourage the medicinal use of various oils or animal fat for the treatment of common ailments in children.³

It is customary to use oil based remedies in various common childhood ailments including nasal stuffiness, infantile colic, constipation and complicated ascariasis. Moreover, in our society animal and vegetable oils are used in neonates and infants to provide “energy” for growth and for the “cleansing” of the gut with the traditional name of “Julab”. The old traditional practice of giving “happy oil bath” to the baby upon his recovery from any illness, oil cleansing of throat, nose, eyes and ears carried out by the grandmother or a skilled women whose services are specifically sought for the purpose is still present in this modern era.⁴ These fatty substances because of their low volatility and high viscosity may not elicit the normal protective cough reflex and may also impair the normal mucocilliary transport. These effects can increase the likelihood of their aspiration and subsequent impaired clearance from the respiratory tract. Moreover, because ghee and oils are tasteless substances, infants and young children often vigorously object their oral administration, resulting

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in gagging that precipitates aspiration, even in neurologically normal infants and children.⁵

Clinical manifestations depend on the type, amount and duration of oil aspirated. Mineral oil aspiration is usually less symptomatic; sometimes the abnormality is only detected on a chest radiograph. On the other hand, animal and vegetable oil aspiration may present with relatively more acute or persistent pneumonia, usually refractory to antimicrobial therapy. Course is often cyclical with recurrent febrile illness and chest infections. These children have failure to thrive, constitutional symptoms of chronic ill health and are more predisposed to secondary infections and complications like bronchiectasis and lung abscess.⁶ Chest x-ray reveals alveolar consolidations, ground glass opacities, alveolar nodules, linear opacities (interlobular septal thickening), mediastinal adenopathy, cavitations and pleural effusion in decreasing order of frequency. High resolution computed tomography (HRCT) scan chest findings considered more specific for the diagnosis of lipoid pneumonia are: air-space consolidations, areas of fatty attenuation, ground glass attenuation and a crazy paving pattern (ground glass attenuation with superimposed septal thickening).^{7,8} These findings are mainly present in the posterior segments of right upper lobe in infancy and posterior segments of right middle and lower lobe after infancy. Results on lipid sensitive (chemical-shift) Magnetic resonance imaging (MRI) include a loss of signal intensity in an area of airspace disease that is considered typical for the presence of lipid. Demonstration of the lipid-laden macrophages in bronchoalveolar lavage (BAL), is the method of choice which provides conclusive evidence for the diagnosis of lipoid pneumonia.^{9,10}

Treatment usually involves discontinuation of exposure to the offending agent and treating any complicating infection with antibiotics along with symptomatic or supportive care. Systemic steroids in short courses have shown clinical and radiological improvement but the results need to be validated by controlled trials.¹¹ Our area is educationally and socioeconomically deprived where various traditional customs are deeply rooted. The people of this underprivileged area are pitifully poor with very low literacy rate. The objective of this study was to determine the

clinical profile of the children with lipoid pneumonia.

PATIENTS & METHODS

This descriptive study was conducted at the department of Pediatrics, Sheikh Zayed Hospital/ Medical College, Rahim Yar Khan. The study period was 02 years, from 1st January 2010 to 31st December 2011. Our hospital is a tertiary care centre with very wide catchment area including District Rahim Yar Khan, District Rajan Pur (across the river Indus) and adjacent districts of the province of Sind and Baluchistan. All the patients presented to the department during the study period and diagnosed as lipoid pneumonia were included in the study. Written consent was taken from the parents and the research was approved by the institutional ethical committee.

In all suspected patients of lipoid pneumonia a detailed history focusing mainly on birth history, developmental history and feeding history including intake of any oil, ghee and butter complaints of respiratory system was attained. Thorough physical examination particularly of respiratory system and CNS was carried out. Investigations carried out on all patients were CBC, Blood C/S, x-ray chest and CT scan chest.

Due to lack of expertise for pediatric bronchoscopy, direct confirmation of lipids in bronchoalveolar lavage fluid could not be obtained and hence our diagnosis of lipoid pneumonia was based upon clinical (especially history of fat intake and its temporal correlation with clinical features), radiological findings (including x-ray chest, HR CT chest) and therapeutic (suboptimal response to antibiotics) grounds.

RESULTS

During the study period of 02 years, 31973 patients were admitted in the department, of which 22 (0.0006%) cases were of lipoid pneumonia. There were 2250 cases of pneumonia, of which lipoid pneumonia accounted for about (0.009%) cases. In all cases birth history was unremarkable and all patients were developmentally normal. Acute presentation with high grade fever, cough and respiratory distress was noted in 05 (22.7%) cases while the onset was insidious with persistent or recurrent respiratory symptoms in 17 (77.2%) cases, as shown in table I. The time interval between aspiration and presentation was <24 hours in 01 (4.5%) case, 2-7 days in 04 (18.3%) cases and >7

days to months in 17 (77.2%) cases. Five (22.7%) cases presented in 1st month of life and 17 (77.2%) cases in post-neonatal age with mean age at presentation being 7.5 months. The age of youngest case was 9 days and eldest case was 1.5 years. Daisee Ghee was administered in 16 (73%) cases, Castor Oil in 04 (18%) cases while Gingilli oil and olive oil in 01 (4.5% each) case each, as shown in table I.

Features	No (%)
MAIN PRESENTING COMPLAINTS	
Acute onset fever, cough and respiratory	05 (22.7%)
Recurrent lower respiratory tract infections	17 (77.2%)
Failure to thrive	17 (77.2%)
TIME INTERVAL (Between aspiration and presentation)	
< 24 hours	01 (4.5%)
2-7 days	04 (18.2%)
> 7 days to months	17 (77.2%)
AGE AT PRESENTATION	
Youngest	09 days
Eldest	18 months
Mean age	" -- --"
TYPE OF OIL USED	
Daisee Ghee	16 (73%)
Castor Oil	04 (18%)
Olive oil	01 (4.5%)
Gingilli oil	01 (4.5%)

Table I: Clinical profile of children with lipid pneumonia (N=22)

The chest radiograph findings included typical homogeneous ground glass appearance sometimes with air spaces or air bronchogram present in more than one lobe, with minimally increased volume of both lungs and no mediastinal shift (probably because of presence of both collapse and consolidation). These findings were mainly (80%) present in the posterior segments of right upper lobe in infancy and posterior segments of right middle and lower lobe after infancy. However, posterior segments of left lung were also involved in a significant number (3) of cases in our study.

High Resolution Computed Tomography (CT) scan chest was performed in all cases. CT scan chest findings were considered more specific for the diagnosis of lipid pneumonia. The main findings in high resolution CT were: air-space consolidations (75%) areas of fatty attenuation, (92%) ground glass attenuation and a crazy paving pattern (ground glass attenuation with superimposed septal thickening (89%).

DISCUSSION

In the current times of information empowerment certain age-old harmful socio-cultural practices such as oil/ghee instillation continues to be a constant public health problem. It is reported that aspiration of fatty substances, particularly milk into the bronchi and alveoli is one of the principal causes of bronchopneumonia in the first few months of life.^{12,13}

The most vulnerable groups are extremes of ages (neonates and elderly peoples), premature babies, marasmic infants and those who are either mentally retarded or have neuromuscular disease. Because of its varied clinical picture, lipid pneumonia remains a relatively unfamiliar entity for clinicians and hence the disease probably remains under diagnosed. The persistent / recurrent nature of respiratory clinical features along with their temporal correlation with oil/ghee instillation, the characteristic radiological findings and suboptimal response to usual treatment for pneumonia implicates oil/ghee instillation as the probable etiology for these persistent or recurrent respiratory symptoms in these children.¹⁴

In our study a total of 22 cases were diagnosed as lipid pneumonia. In all these cases, lipid pneumonia resulted after oral administration of ghee/oil. Though aspiration during oral administration is the commonest mechanism, however, it has been reported after rectal administration as a result of mineral oil embolization,⁹ excessive use of lip balm/petroleum jelly, nasal and oral lubricant.¹⁵

Among these 22 cases in our study, only 05 (22.7%) cases presented acutely with the complaints of high grade fever, cough and respiratory distress. Ginigere et al reported 60 (87%) cases of lipid pneumonia in which the presentation was acute and also 48 (70%) patients presented within 07 days of oil installation in another study,^{2,16} this comparative low percentage of acute presentation in our study (22.7%) is probably due to delay in seeking tertiary care advice owing to highly prevalent illiteracy, poverty and lipid pneumonia-unfamiliarity of the primary care physicians.

The presentation was insidious/sub-acute in seventeen (77.2%) cases in our study who presented with recurrent or persistent complaints pertaining to respiratory system including cough, tachypnea, dyspnea, wheezing, fever and failure to thrive. Most of these patients were having these complaints for the last many weeks to months either persistently or

periodically. In none of these cases history of oil/ghee intake was told directly at presentation. It was only after examining the “suspicious” chest radiograph that these cases were suspected to have lipoid pneumonia. Then in retrospective, history of intake of ghee, butter and oil was particularly and repeatedly inquired. All these 17 cases were given ghee/oil on multiple occasions; the course of the disease was indolent and prolonged one, 05 patients expired in our department while in others follow up could not be maintained. Ginigere et al² reported 23 (35%) cases of lipoid pneumonia in which the presentation was insidious; however in our study the presentation was more insidious and late, probably because of poverty and illiteracy, the parents approach to tertiary care level only after going through many traditional health care providers and general practitioners. The presentation was also recurrent or persistent pneumonia and more delayed in a study reported by Maria et al.³ In a multicentre study of 44 cases of lipoid pneumonia, Gondouim et al observed that 21% cases developed chronic lung disease.¹³ In our study 5 (22.7%) cases presented in 1st month of life and 17 (77.2%) cases in post-neonatal age with mean age at presentation being 7.5 months. The age of the youngest case was 9 days and the eldest case was 1.5 years. The age range was 1 to 19 months in a study reported by Maria et al.³ The age range was 1 to 108 months with mean age of 20 months in 28 patients while age range of 15 days to 18 months among 69 cases of lipoid pneumonia was reported in two other studies.^{17,18} In our experience, the chest radiograph findings in an established case of lipoid pneumonia are very peculiar. These are almost unforgettable if one deeply observes few typical radiographs of lipoid pneumonia. These include typical homogeneous ground glass appearance sometimes with air spaces present in more than one lobe, with mildly increased volume of both lungs and no mediastinal shift (probably because of presence of both collapse and consolidation). Annobil et al described the pulmonary radiological manifestations of lipoid pneumonia in 24 children with aspiration of ghee into four broad categories, viz bilateral multilobar consolidations (BMLC) in 50% (12 cases), bilateral perihilar infiltrates (BPHI) with or without associated lobar consolidation in 21% (five cases), right perihilar infiltrates (RPHI) in 21% (five cases) and

unilateral right lobar consolidation (RMLC) in 8%.¹⁵ Due to lack of facility of bronchoscopy, direct confirmation of lipids in bronchoalveolar lavage fluid could not be obtained and hence we might have over diagnosed cases of lipoid pneumonia.

CONCLUSION

Because of innocuous universal practice of using oil based remedies, there is need to ask questions directly about ghee/oil intake from patients presenting with respiratory complaints in general and chronic or recurrent pneumonia in particular. Lipoid pneumonia must be considered in the differential diagnosis of all cases of respiratory distress more particularly of chronic/recurrent respiratory symptoms especially if there is suboptimal response to antibiotics. The high prevalence of use of these oil/ghee based remedies justifies the anticipatory education of health care professionals, who then can counsel parents and caregivers of young children to avoid oil/ghee administration and hence to avoid the easily preventable but potentially life threatening lipoid pneumonia. Moreover, the involvement of media and other health agencies can also be rewarding.

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