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Case Report

PNEUMONIA THERAPY OF AN INFANT ADMITTED IN A LOCAL HOSPITAL OF RAWALPINDI, PAKISTAN; A CASE REPORT

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ABSTRACT

Pneumonia was regarded as "the captain of the men of death" during the 19th century. It was more dreadful illness of infants. However; the advents of antibiotic and vaccines in the 20th century have contributed the radical improvements in survival outcomes. Nevertheless, in the third world, and among the very old, the very young and the chronically ill, pneumonia remains a leading cause of death. Thus; we have aimed this case study to understand the scientific and therapeutical comprehension of pneumonia. A six month old baby (girl) was presented in a local hospital, Rawalpindi, Pakistan with pneumonia. On basis of her medical investigation the physician prescribed the injection Claforan (cefotaxime) 250mg IV (intra venous) TDS (three time a day) for four days; injection Grasil (amikacin sulphate) 50mg IV BID (two time a day); Ventolin (salbutamol albuterol) nebulisation after every 3 hours; syrup Paramac (paracetamol) 1 TSF (tea spoonful) or 120mg /5ml SOS (as required); injection Lasix (furosemide) 10mg IV stat (immediately); tablet Capoten (captopril) 12.5mg ½ BID; syrup Acefyl (acefylline piperazine) and syrup Phenergan were administered for first two days. Her vomiting and coughing symptoms were settled. Vital signs showed fever of RR 38 breaths /minute, HR 110/minute, CVS= S1+S2+ Ponsystolic membrane and 102°F temperature. No cyanosis and clubbing were observed. There were certain clinical and pharmaceutical inaccuracies were noted during the treatment. Thus; a rational clinical practice needed to implement health care system. Specially; the avoidable clinical errors are required to be addressed to optimize the regimens. Moreover; the substandard pharmaceutical care and poor clinical services are major obstacles to cure this disease. Therefore; the comprehensive clinical examination and therapeutical care will help to avoid the undesired health related consequences.

Key Words; Pneumonia, infant, pharmaceutical care, clinical services.

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INTRODUCTION:

Pneumonia is a pulmonary inflammatory condition affecting the alveoli or microscopic air sacs. The main symptoms associated with this mortal disease are high fever, cough, shaking chill,

shortness of breathing, sharp or stabbing, chest pain, confusion and an increased respiratory rate (RR). Fever, however, is not very specific, as it occurs in many other common illnesses and may not be seen in severe disease or malnutrition. More serious symptoms may include: central cyanosis, decreased thirst, convulsions, persistent vomiting, or a decreased consciousness.

The pneumonia caused by *legionella* associated with abdominal pain, diarrhea, or confusion, *streptococcus pneumonia* associated with rusty colored sputum; while the pneumonia caused by *Klebsiella* may have bloody sputum.

The mortality rate in children (less than 5 years of age) is 14 deaths per 1000 children annually before giving any medical treatment in the north-western part of Pakistan (Khan et al., 1990). While; in a village in the Northern Areas, 44% of all deaths in children less than 5 years of age between 1988 and 1991 were occurred because of the pneumonia (Marsh al el, 1993). Mortality Surveillance by the Aga Khan Health Services, Pakistan (AKHSP) in the Northern Areas, showed that pneumonia causes approximately 33% of deaths in infants and 37% in children aged 1–4 years (Annual report 2001). While Rudan et al., (2004) reported > 95% early childhood pneumonia worldwide occurs in children aged 0–4 years in developing countries at an incidence rate of 0.28 episodes per year (Rudan et al., 2004). A study conducted in Karachi on children aged 2–59 months in 2002, found low pneumonia rates; 8.2 per 100 child-years (Nizami et al., 2006). Unpublished studies in 1990s conducted near Gilgit (capital of the Northern Areas of Pakistan) reported the incidence of 30 cases per 100 child-years of observation in children under 5 years of age (Pechere et al., 1995).

The high incidences of pneumonia were seen in infants and children at high altitudes with rates of 30 episodes per 100 children per years (Lanata et al., 1994). The factors associated with pneumonia include male gender (Monto et al., 1994), malnutrition (Black et al., 1982), micronutrient deficiency (Barreto et al., 1994), low immunization coverage (Oyejide et al., 1990), low household income (Tupasi et al., 1990), Hiovercrowding (Ruutu et al., 1990), dietary quality (Muhammad et al., 2010), poor breastfeeding practices (Victora et al., 1999) and exposure to indoor air pollution (Smith et al., 2000).

CASE REPORT

A six month old baby (girl) was presented in the Pediatric ward of local hospital, Rawalpindi, Pakistan with chief complaints of high fever (since last 2 days), pain, cough vomiting and severe malnutrition. The high grade fever was not associated with chills and rigors. Her physical examination showed temperature 104°F, respiratory rate 60 breaths/ minute, heart rate 130 beats /minute and chest bilateral crepts on auscultation. Her medical showed sub-vaginal delivery (SVD) and up to date vaccination profile. She is under nourished (poor breast and bottle fed) because of her lower middle class family social background.

On basis of her medical investigation (primary diagnosis) the physician prescribed the injection Claforan (cefotaxime) 250mg IV (intra venous) TDS (three time a day) for four days; injection Grasil (amikacin sulphate) 50mg IV BID (two time a day); Ventolin (salbutamol albuterol) nebulisation after every 3 hours; syrup Paramac (paracetamol) 1 TSF (tea spoonful) or 120mg /5ml SOS (as required); injection Lasix (furosemide) 10mg IV stat (immediately); tablet Capoten (captopril) 12.5mg ½ BID; syrup Acefyl (acefylline piperazine) and syrup Phenergan were administered for first two days. The clinical findings showed the definite symptoms of pneumonia. On 2nd day of therapy, her vomiting and coughing symptoms were settled with loose

motion, abdomen discomfort and chest bilateral crepts. Vital signs showed fever of RR 38 breaths /minute, HR 110/minute, CVS= S1+S2+ Ponsystolic membrane and 102°F temperature. No cyanosis and clubbing were observed. While; on 3rd day, her fever reduced to 101°F, nourishment improved, RR become 50 breaths/minute, HR 140 beats/minute, with chest bilateral harsh sound. CVS= S1+S2+Ponsystolic membrane. Thus; the physical continued the current treatment and executed the Echo tests. Whereas; on the 4th day, the temperature became 102°F, RR 54 breaths /minute, HR 140 beats/minute, abdomen soft, chest bilateral clear. CVS S1+S2+Ponsystolic membrane. Treatment continued and oral intake was encouraged. On the 7th day, her temperature became 98°F, RR 30 breaths/minute, HR 120 beats/ minute. Thus; the treatment was continued.

DISCUSSION

The BNF (British National Formulary) is one the standard books used to design the treatment plans. The dose regimen of injection Claforan, Ventolin nebulization, syrup Paramac, injection Lasix, tablet Capoten and syrup Acefyl prescribed according to the specifications. But; the dose of injection Amikacin was noticed higher than the recommended dose.

While the syrup Phenergen (Promethazine) is contraindicated in children less than 2 years of age Starke et al. (2005) and less than 3 years of age (BNF et al.2007) was recommended as ½ TSF BD for first two days. Promethazine is known to cause respiratory depression in infants especially, because of the under developed CYP2D6 enzyme system; required to convert the drug to non-toxic metabolites. Thus; the child was under the age of six months and should be avoided to administer. That may introduce the serious medical complications.

Besides this, the patient has the symptoms of loose motions and continuously dehydrated since 5 or more days. She needed to be monitored for fluid and electrolytes to maintain an electrolytic balance. But; she was prescribed diuretic that has aggravated her situation; hypokalemia occurs as a result of the salbutamol/albuterol and furosemide. That was counter balanced by the administration of Captopril which produced hyperkalemia.

Moreover; the furosemide and aminoglycosides (i.e., Amikacin in this case) are prone to cause ototoxicity. That markedly increased combination therapy and need intensive therapeutical monitoring. Aminoglycosides also cause visual disturbances and renal function alteration. But; the clinical setting has not arranged the proper auditory or vision examination system. In addition of that; the drugs like Cefotaxime, Captopril, Paracetamol and Phenergen cause blood dyscrasias and should be monitored (CBC-complete blood count) time to time.

This study is substantiated by Khan &Blum (1979) who reported the potential respiratory depression and apnea introduced by promethazine in infants. They reported four victims of sudden infant death syndrome (SIDS) received promethazine in treatment. They evaluated 52 more SIDS cases, found 23% of the SIDS victims and 22% of near-miss SIDS patients received phenothiazine prior to the event (Khan & Blum 1982). While Buck & Blumer (1991) reported respiratory depression in infants, particularly premature neonates, not be able to metabolize promethazine as well as older children and adults due to lower levels of CYP2D6 activity or reduced sulfur stores. FDA (2000) strengthened the warning section of the prescribing information for promethazine to state that it should not be used in children less than 2 years of age. Starke et al. (2005) reported the 22 cases of respiratory depression the FDA between 1969

and 2003 including 7 deaths. As a result, the FDA added a black box warning to promethazine in November 2004, declaring its use in children less than 2 years as contraindicated.

CONCLUSION

The rational therapy of pneumonia is a serious issue and need unusual intention of health professionals. Specially; the avoidable clinical errors are needed to be addressed for optimizing the therapy plans. Moreover; the substandard pharmaceutical care and poor clinical services are major obstacles to cure this disease. Therefore; the comprehensive clinical examination and therapeutical care will help to avoid the undesired health related consequences.

REFERENCES

- Annual report 2001, Pakistan Northern Areas and Chitral. *Islamabad: Aga Khan Health Service; 2002*
- Barreto ML, Santos LM, Assis AM, Araújo MP, Farenzena GG, Santos PA, et al., et al. Effect of vitamin A supplementation on diarrhoea and acute lower respiratory tract infections in young children in Brazil. *Lancet* 1994; 344: 228-31 doi: [10.1016/S0140-6736\(94\)92998-X](https://doi.org/10.1016/S0140-6736(94)92998-X) pmid: [7913157](https://pubmed.ncbi.nlm.nih.gov/7913157/).
- Black RE, Brown K, Becker S, Yunus M. Longitudinal studies of infectious diseases and physical growth of children in rural Bangladesh. *Am J Epidemiol* 1982; 115: 305-14 pmid: [7064969](https://pubmed.ncbi.nlm.nih.gov/7064969/)
- Black RE. Zinc deficiency, infectious disease and mortality in the developing world. *J Nutr* 2003; 133: 1485S-9S pmid: [12730449](https://pubmed.ncbi.nlm.nih.gov/12730449/)
- Buck ML, Blumer JL. Phenothiazine-associated apnea in two siblings. *DICP Ann Pharmacother* 1991;25:244-7
- Khan AJ, Khan JA, Akbar M, Addiss DG. Acute respiratory infections in children: a case management intervention in Abbottabad District, Pakistan. *Bull World Health Organ* 1990; 68: 577-85 pmid: [2289294](https://pubmed.ncbi.nlm.nih.gov/2289294/).
- Khan A, Blum D. Possible role of phenothiazines in sudden infant death. *Lancet* 1979;i:364.
- Lanata CF, Quintanilla N, Verastegui HA. Validity of a respiratory questionnaire to identify pneumonia in children in Lima, Peru. *Int J Epidemiol* 1994; 23: 827-34 doi: [10.1093/ije/23.4.827](https://doi.org/10.1093/ije/23.4.827) pmid: [8002198](https://pubmed.ncbi.nlm.nih.gov/8002198/).
- Lehmann D. Epidemiology of acute respiratory tract infections, especially those due to Haemophilus influenzae, in Papua New Guinean children. *J Infect Dis* 1992; 165: S20-5 pmid: [1588165](https://pubmed.ncbi.nlm.nih.gov/1588165/)
- Marsh D, Majid N, Rasmussen Z, Mateen K, Khan AA. Cause-specific child mortality in a mountainous community in Pakistan by verbal autopsy. *J Pak Med Assoc* 1993; 43: 226-9 pmid: [8114258](https://pubmed.ncbi.nlm.nih.gov/8114258/)
- Monto AS. Studies of the community and family: acute respiratory illness and infection. *Epidemiol Rev* 1994; 16: 351- pmid: [7713184](https://pubmed.ncbi.nlm.nih.gov/7713184/)

Muhammad Shoaib Akhtar, Sehrish Ali, Sajid Bashir and Naheed Abbas. Nutritive value of chicken patty and four different pizzas, and their glycaemic indices in normal and diabetic volunteers. *J App Pharm* 2010; 4 (2) : 120-125

Nizami SQ, Bhutta ZA, Hasan R. Incidence of acute respiratory infections in children 2 months to 5 years of age in periurban communities in Karachi. *J Pak Med Assoc* 2006; 56: 163-7 pmid: [16711336](#)

Rudan I, Tomaskovic L, Boschi-Pinto C, Campbell H, WHO Child Health Epidemiology Reference Group.. Global estimate of the incidence of clinical pneumonia among children under five years of age. *Bull World Health Organ* 2004; 82: 895-903 pmid: [15654403](#).

Oyejide CO, Osinusi K. Acute respiratory tract infection in children in Idikan Community, Ibadan, Nigeria: severity, risk factors and severity of occurrence. *Rev Infect Dis* 1990; 12: S1042-6 pmid: [2270403](#).

Pechere JC, editor. *Community acquired pneumonia in children*. Worthing: Cambridge Medical Publications; 1995.)

Ruutu P, Halonen P, Meurman O, Torres C, Paladin F, Yamaoka K, et al., et al. Viral lower respiratory tract infections in Filipino children. *J Infect Dis* 1990; 161: 175-9 pmid: [2153734](#)

Smith KR, Samet JM, Romieu I, Bruce N. Indoor air pollution in developing countries and acute lower respiratory infections in children. *Thorax* 2000; 55: 518-32 doi: [10.1136/thorax.55.6.518](#) pmid: [10817802](#)

Starke PR, Waver J, Chowdhury BA. Boxed warning added to promethazine labeling for pediatric use. *N Engl J Med* 2005;352:2653.

Thomas J. Lamb, P.A. Lumina Station, Suite 225 1908 Eastwood Road Wilmington, NC 28403 TJL@LambLawOffice.com;
http://www.druginjury.com/druginjurycom/2006/05/phenergan_and_s.html

Tupasi TE, Leon LE, Lupisan S, Torres CU, Leonor ZA, Sunico ES, et al., et al. Patterns of acute respiratory tract infection in children: a longitudinal study in a depressed community in Metro Manila. *Rev Infect Dis* 1990; 12: S940-9 pmid: [2270416](#)

Victoria CG, Kirkwood BR, Ashworth A, Black RE, Rogers S, Sazawal S, et al., et al. Potential interventions for the prevention of childhood pneumonia in developing countries: improving nutrition. *Am J Clin Nutr* 1999; 70: 309-20 pmid: [10479192](#)

British National Formulary (BNF) 2007, BMJ publishing group Ltd and RPS publishing 2007. ed.54, p167. ISSN:0260-535X