NOCARDIA AND ASPERGILLUS PNEUMONIA IN A NEAR DROWNING VICTIM.

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Abstract:
Fungal pneumonia and pneumonia caused by uncommon organisms usually occurs in immunocompromised individuals, but this should be considered as a differential diagnosis in immunocompetent individuals when there is history of chronic lung diseases, submersion injury and contaminated open wounds. In our case a previously normal 7 year old female child was admitted with history of aspiration and extensive pneumonia following a near drowning incident. Child did not respond to multiple antibiotics. Culture of the bronchoalveolar lavage specimen showed Aspergillus and Nocardia. Culture of the water from the site of fall also grew Aspergillus.

Keyword: Immunocompetent person, near drowning, Nocardia and Aspergillus pneumonia.

7 year old female child, had an accidental fall from a height into a pool of stagnant rain water and sustained a skull fracture. She was treated in a private nursing home and discharged after 10 days. 4 days later she was admitted at our hospital with high grade fever, cough and breathlessness. She was febrile and in respiratory distress. She was treated in a private nursing home and discharged after 10 days. 4 days later she was admitted at our hospital with high grade fever, cough and breathlessness. She was febrile and in respiratory distress. X ray chest showed extensive pneumonia (fig 1). Inj. Ceftriaxone and Cloxacillin were started empirically and later changed to Piperacillin – tazobactum and metronida-zole as she did not show any improvement. Tuberculosis, HIV screening and Nitroblue tetrazolium test for chronic granulomatous disease were negative. Her serum immunoglobulin profile was also normal. Therefore the possibility of fungal pneumonia was considered and bronchoalveolar lavage was taken and sent for culture. As Pseudallescheria boydii has been reported as the most common fungi grown in near drowning victims and is also not usually sus-ceptible to Amphotericin –B, Inj. Voricona-zole was started empirically pending culture reports.
DISCUSSION:
Fungal pneumonia in a near drowning victim is a well-known and potentially life-threatening complication. The risk is highest when there is aspiration during submersion. The sand particles aspirated damage the pulmonary epithelium and make it even more susceptible to colonisation and infection. In a study published in Clinical Infectious Diseases 1997\(^1\), Aeromonas species and Burkholderia pseudomallei were the most common bacteria and Pseudallescheria boydii the most common fungi isolated from near drowning victims. Other organisms reported were Nocardia, Legionella, aspergillus, rhizopus, scedosporium. A case of invasive pulmonary and CNS aspergillosis after near drowning has been reported from Netherlands\(^2\), another case of pneumonia involving Aspergillus and Rhizopus species with subsequent Nocardia co-infection is reported from the same country\(^3\). At least 6 pediatric cases of CNS infections caused by Pseudallescheria boydii after near drowning has been reported\(^2\). Hence, though the exact incidence is not known, it is certainly not rare. These organisms are unresponsive to the commonly used anti-microbials. Hence a high degree of suspicion and meticulous work up to culture the organisms is needed and specific anti-microbials have to be started. The radiographic abnormalities are variable but are often bilateral and diffuse.\(^1\) Nocardia are gram positive filamentous bacteria found ubiquitously in soil. It can cause localised lymphocutaneous disease or systemic disease. In the United States of America, it has been estimated that 500-1000 cases occur annually. Systemic disease usually occurs in immunocompromised patients but can also occur in immunocompetent individuals with predisposing factors such as submersion injury. Pulmonary nocardiosis manifests as fever, cough, dyspnea, hemoptysis. Diagnosis is by culture of the organism from sputum, broncho alveolar lavage and biopsy specimen. Treatment is with Sulphanamides, Imipenem and linezolid. Often cotrimoxazole has to be continued for a period of 6 months. The mortality rate approaches 50\% when sulphamethoxazole alone is used for treatment\(^4\). Combination therapy with carbapenems, quinolones and linezolid are recommended. Aspergillus is the most common mould and occasionally causes invasive disease in human beings. The incidence of invasive aspergillosis is 19 – 26\% in patients who have undergone heart and lung transplant. Invasive disease includes sinonasal, pulmonary and disseminated aspergillosis. Infection is usually acquired from inhalation of airborne spores. Ingestion and aspiration may also produce disease. Unlike adults children frequently do not manifest cavitation or the air crescent or halo signs, and this can significantly impact diagnosis\(^5\). Diagnosis is by culture of Aspergillus from normally sterile pulmonary secretions obtained by bronchoalveolar lavage or by lung biopsy. The use of empirical antifungal therapy for near drowning victims should generally be avoided, but if the patient is slow to respond to antibacterial therapy, a diagnosis of invasive fungal disease should be considered. The most common fungi in drowning victims Pseudallescheria boydii\(^6\) is usually not susceptible to Amphotericin B\(^1\). Hence Voriconazole is a better option as it is more efficacious and has less adverse effects when compared with amphotericin and has good spectrum of activity against Aspergillus and Scedosporium (which is the asexual form of P.boydii)\(^7\). Treatment should be continued for a period of 3-4 months.
REFERENCES:


Fig 4 Microscopic picture of Aspergillus

Fig 5 X-ray taken before discharge showing resolving pneumonia