

AEROMONAS : THE FORGOITEN PATHOGEN

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Diarrhoeal disease is caused by a variety of pathogens which include bacteria, parasites and viruses. Apart from the major aetiological agents (Salmonella, Shigella, pathogenic E. Coli) Aeromonas is also a significant enteric pathogen¹. Its infection should always be looked for before considering the culture as negative, because Aeromonas is not a part of normal human faecal flora² or opportunist pathogen³. Aeromonas is widely distributed in nature and can be pathogenic to man and animal. It is a facultative anaerobic, gram negative rod shaped bacteria, first discovered in the last decade of 19th century as natural inhabitant of aquatic environment and animals. Aeromonas has a cosmopolitan distribution in marine and freshwater, sewage, soil and food⁴. Survival seems to depend on moisture and the presence of organic matter⁵. Aeromonas have been recovered from tap water³, hospital water⁶, swimming pool, lakes⁷ and rivers. Human infection is often related to water exposure^{5,8} and drinking of untreated water is risky for susceptible hosts^{9,10}. Studies have shown simultaneous isolation from faeces and water supply. Although several characteristics differ in clinical and environmental strains but many of the strains found in water have properties, identical with those of clinical isolates and they may be potential enteric pathogens^{11,12}. Majority of isolates from human source are recovered from gastrointestinal and intraabdominal sites and are transient in nature resulting in self limiting and localized infection^{13,14}. Animal and human carriers are also present¹⁵. Aeromonas may act as primary pathogen occurring during spring and summer and in children under two years of age. There have been reports of acute diarrhoea associated with Aeromonas hydrophilia^{16,17} but the virulence factor varies from one country to another¹⁸. The difference in isolation may be due to geographic location, seasonal difference and method of isolation^{19,20}. Duration of illness is greater than 10 days with fever, abdominal cramps and vomiting²¹. Volunteer studies or intestinal biopsies of patients with diarrhoea may be required to establish Aeromonas as gastrointestinal pathogen²². Aeromonas has been associated with a wide range of human infection, the site of infection and the host defence status defining the severity of disease. Positive cultures have been reported from bile in biliary obstruction, Cholecystitis²³, and Septicaemia mostly in association with hepatobiliary disease, malignancy⁵, intraabdominal abscess and surgical wound infections²⁴, urinary tract infection, rare cases of meningitis, peritonitis, otitis and endocarditis¹. Cellulitis or wound infection is related to exposure to water or soil and occur most frequently during warm season²⁵. Aeromonas grows well on moist enteric selective medium. For isolation from faeces sheep blood agar added with ampicillin (15 ug per ml) can be used²¹. Overnight enrichment in alkaline peptone water yield 2-6 times more isolates as compared to other media like MacConkey agar and SS agar²⁶. A. hydrophilia in faeces is detected by flooding the plate with oxidase reagent after growth. A positive oxidase test is an important biochemical property of this genus. A. hydrophilia are hemolytic²⁷. Identification can be done by API-20E²⁸. Biochemical characters associated with virulence and tests used for Aeromonas are positive Voges-Proskauer reaction, production of gas from glucose, fermentation of mannose and absence of B D galactosidase and esculin hydrolysis²⁹. Antibodies to A. hydrophilia (antihemolysin, agglutinin, precipitin) have been detected in patients with deep infection. Several toxic factors have been isolated from A. hydrophilia culture filtrates (leucocidin, hemolysin, cytotoxin). A. hydrophilia is resistant to Ampicillin and Carbencillin with variable susceptibility to Cephalosporins, Polymixin and Tetracyclines. It is usually susceptible to

aminoglycosides, Naladixic acid Nitrofurantoin, Chloramphenicol and Sep. tran^{30,31}. Although there are reports regarding the presence of *Aeromonas* in diarrhoeal cases in India⁸, Thailand^{32,33} and Bangladesh, it is possible that *Aeromonas* is present in diarrhoeal patients in Pakistan, therefore a preliminary study is planned at PMRC Research Centre, Karachi to detect this neglected pathogen.

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