



RESEARCH ARTICLE

UNILATERAL AXILLARY LYMPHADENITIS CAUSED BY *PSEUDOMONAS AERUGINOSA*- A RARE CASE REPORT

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Abstract

Pseudomonas aeruginosa has been reported as the causative organism of a wide spectrum of infections ranging from wound infections to fatal Ventilator Associated Pneumonia (VAP), mainly in nosocomial and ICU setup. Patients usually have a known history of immunocompromised state, including burn patients and patients with Diabetes Mellitus. The recent advent of Carbapenem Resistant *Pseudomonas aeruginosa* (CRPA) has presented with a unique diagnostic and therapeutic challenge. Very few literatures exist regarding Pseudomonal infections manifesting as axillary lymphadenitis. Here, a case of unilateral axillary lymphadenopathy in an apparent immunocompetent host is reported from a tertiary care hospital in North Eastern India.

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Introduction:-

Pseudomonas aeruginosa, a gram negative, aerobic bacillus, is ubiquitous in nature and is usually implicated in a wide spectrum of serious infections in immunocompromised patients, burn patients, recent surgery, hospital admission, and bodywounds.^[1] This organism is generally intrinsically resistant to a wide variety of antimicrobial agents as well as has the capacity to develop resistance by mutation or acquisition of foreign resistance genes against different antibiotic classes.^[2] Recently, the advent of Carbapenem Resistant *Pseudomonas aeruginosa* (CRPA) (17.8-19% prevalence in 2015) has severely limited the therapeutic choices in a patient and so, WHO has taken urgent steps to prevent CRPA infection.^[3] *Pseudomonas aeruginosa* is mostly associated with wound infection, septicemia, pneumonia, urinary tract infections, eye and ear infections in long term health-care setup as a result of nosocomial infection, but very few cases have been reported where *Pseudomonas* infection has manifested in the form of lymphadenitis.^[1,4] Here we are reporting a case of unilateral axillary lymphadenitis caused by *Pseudomonas aeruginosa*.

Case Report:

A 29 years old, non-diabetic, non-hypertensive male patient coming from an urban locality presented to the Department of Surgery, Agartala Government Medical College and GBP Hospital, Agartala, Tripura on 5th April, 2020 with chief complaints of sudden onset swelling in his right axillary region 2-3 days after being scratched by a

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cat on right hand. It was painless and associated with mild fever. A clinical diagnosis of 'cat-scratch disease' (infection caused by *Bartonella henselae*, a gram negative α_2 proteobacteria) was made and he was started on Tab. Doxycycline 100mg BD for 7 days which is the drug of choice.

Three days following the antimicrobial therapy, patient suddenly developed discharge from the swelling. It was greenish in color and it was associated with fever and pain in the right axillary region.

On General physical examination, patient was of average built, febrile, with stable vitals (HR- 96/min, regular; BP- 130/80mm Hg). Systemic examination was within normal limits. Local examination revealed a large (approx. 5cm diameter), firm, immobile, tender swelling, 5cm anterior to the right midaxillary line. It was associated with greenish white, non-foul smelling, serosanguinous discharge. There was no other enlarged lymph node in other parts of the body



Fig 1:- Image showing right axillary lymphadenopathy with discharging sinus.

Diagnostic work up:

Routine investigations revealed high total leukocyte counts ($14,000/\text{mm}^3$) with neutrophilic predominance, normal Hb% (11.3 g%) and raised ESR level (24mm/hour). His fasting and post prandial blood glucose levels were within normal limits (102mg/dl and 133mg/dl respectively). His LFT, KFT and lipid profile were within normal limits.

Right axillary USG revealed a large (5.2 x 2.7cm) lymph nodal mass lesion with possible central necrosis.

FNAC from the lymph node was performed but it did not reveal any feature of granulomatous inflammation.

The discharge was collected after careful cleaning of the skin surface and then by a sterile inoculating loop in Department of Microbiology, AGMC and was processed as per standard protocol followed in the Department^[5,6]. Gram stain was performed which revealed plenty of pus cells per OIF with Gram Negative Bacilli. Ziehl-Neelsen stain was performed but no Acid- Fast Bacilli were seen. His CBNAAT test was also negative. Discharge was inoculated in Blood agar, MacConkey agar, Nutrient agar plates and incubated at 37°C under aerobic conditions. Anaerobic culture was also performed after inoculation in Blood agar plate and Robertson's Cooked Meat Broth incubated at 37°C . Discharge was inoculated in Tryptic Soya agar plate supplemented with 5% sheep blood, incubated at 37°C under 5-10% CO_2 for 21 days to isolate *Bartonella henselae*.^[7] Fungal culture was also performed by inoculation in Sabouraud Dextrose Agar (SDA) with and without antibiotics, incubated at 37°C and 25°C

After 24 hours of aerobic incubation at 37°C , growth of bacterial colonies was observed in Blood agar and MacConkey agar plates. Blood agar showed growth of large, grey, irregular, moist colonies and MacConkey agar showed growth of non-lactose fermenting, large, irregular colonies. Growth in nutrient agar showed presence of diffusible green pigment. Colonies were identified as *Pseudomonas aeruginosa* through colony morphology, biochemical tests, pigment formation and growth at 42°C .^[8] No growth was observed in anaerobic culture after 5

days of incubation or in Tryptic Soya agar plate after 21 days of incubation. No growth was observed in fungal culture after 21 days of incubation.

Antimicrobial susceptibility test was performed using Kirby- Bauer's disc diffusion method ^[9] as per CLSI protocol M100 ED30:2020. ^[10] The strain was susceptible to Piperacillin- Tazobactam (100/10µg), Ceftazidime (30µg), Cefepime (30µg) and Imipenem (10µg) and resistant to Amikacin (30µg) and Levofloxacin (5µg).

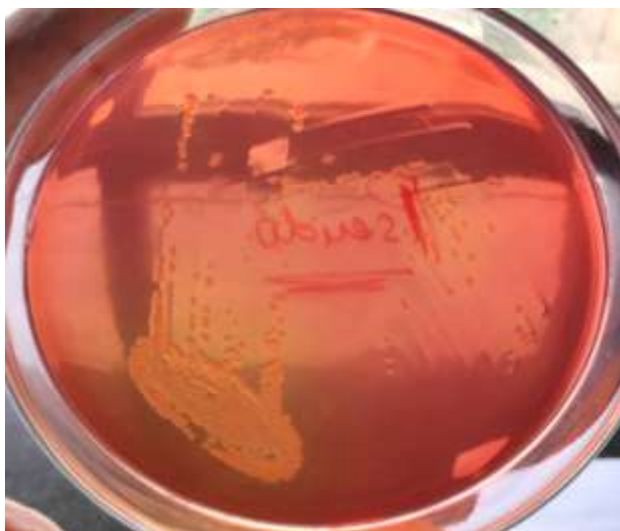


Fig 2:- MacConkey Agar Plate (MAC) showing growth of Non lactose fermenting (NLF), small, irregular colonies.



Fig 3:- AST by Kirby- Bauer's disc diffusion method on Mueller Hinton Agar Plate, showing greenish pigmentation.

Follow up-

Patient was started on Inj. Ceftazidime 1gm IV 8 hourly for 7 days. His condition improved but discharge was still present. A second culture was obtained and processed as described which yielded the same organism with similar antimicrobial susceptibility profile. He was started on Inj. Piperacillin- Tazobactam 4.5gm IV 8 hourly for 7 days. His further recovery was uneventful.

Discussion:-

Pseudomonas aeruginosa is an opportunistic pathogen, causing serious infection in patients with weakened immune systems, including life threatening ventilator associated pneumonia (VAP), surgical site and urinary tract infections in patients from Intensive Care Units (ICUs). ^[11] As per ICMR data, 2019, it is the third most common isolate from clinical samples (12%) following *Escherichia coli* and *Klebsiella pneumoniae* and carbapenem resistance was seen in

50% of the isolates from ICU, followed by 35% from ward and 20% from OPD which is a matter of grave concern.^[12] Lymphadenitis is a novel manifestation of *Pseudomonas aeruginosa* infection. Bacterial causes of axillary lymphadenitis include cat-scratch disease, staphylococcal or streptococcal infections, mycobacterial infections, tularemia and brucellosis.^[3] Only one case of axillary lymphadenitis due to *Pseudomonas aeruginosa* infection has been reported till date (Pinninti SG et al, 2008).^[3] Our case has a typical history for Cat scratch disease, but it was ruled out by both microbiological and histopathological examinations. Infection caused by *Pseudomonas aeruginosa* was confirmed by re-isolation of the organism with similar antimicrobial profile. The patient did not have any apparent predisposing conditions and further tests are now being carried out to rule out any other form of immunocompromised state.

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