**Abstract:** A case of a 70-year-old male patient with a non-healing ulcer over the leg, without any possible indication about the source of the present infection. Wound discharge sent for culture and sensitivity was inoculated on Blood Agar, MacConkey’s Agar, and later, on TCBS Agar. Overnight incubation showed Klebsiella pneumoniae and Shewanella algae to be present in the sample. Shewanella algae was identified by conventional methods; identity was subsequently confirmed by an automated system. Antibiotic Susceptibility Testing by Modified Kirby - Bauer Disk Diffusion Method showed sensitivity to all antibiotics tested. This case indicates that awareness should also be extended to unusual pathogens even when isolating organisms from a common condition, and despite favorable sensitivity to routinely used antibiotics, they should be regarded as emerging opportunistic pathogens.

**Key Words – Non-healing ulcer, Shewanella, opportunistic pathogen**

**I. Introduction:**

The Case: A 70-year-old man was admitted to surgical ward with a non-healing ulcer over the lateral aspect of left leg, approximately 30 x 10 cm in size with irregular margins, flat edges, non-necrotic floor which bled on touch. The patient had a history of wandering around aimlessly; he was a known case of senile dementia. He was brought by his relative to the hospital, without any possible information about the source of the present infection. Wound discharge was sent for culture and sensitivity before constituting empirical antibiotic therapy.

**II. Materials and Methods:**

Discharge from the wound was inoculated on Blood Agar and MacConkey’s Agar, and incubated aerobically at 37°C overnight. Hanging drop preparation was examined to ascertain its motility, and smears from the colonies were stained with Gram’s stain for examination to ascertain its morphology. Isolated colonies were then inoculated on Thiosulphate Citrate Bile-salt Sucrose Agar. Biochemical tests for Gram-negative organisms, as well as those for identification of non-fermenters were carried out, they were Indole test, Methyl Red test, Citrate Utilization, Urease Production, Triple Sugar Iron test, Decarboxylation tests, and Hugh-Leifson’s Oxidative Fermentative test (Figure 4). Antibiotic Susceptibility was tested by Modified Kirby-Bauer Disk Diffusion Method, and drugs were tested according to CLSI 2020 M-100 manual (Table 1). Identification was subsequently authenticated by VITEK II automated system (bioMérieux, Marcy l’Etoile, France).

**III. Results and Discussion**

Blood agar showed large circular orange-brown low convex colonies with zone of hemodigestion around them (Figure 1). MacConkey’s Agar showed circular non-lactose-fermenting colonies (Figure 2). The colonies showed a positive Catalase and Oxidase test. Hanging drop preparation showed darting motility, and Gram’s-stained smears from the colonies showed slender Gram-negative bacilli ranging from 1.5 - 3 μm x 0.5 - 1 μm in size. Thiosulphate Citrate Bile-salt Sucrose (TCBS) Agar showed non-sucrose fermenting colonies (Figure 3). Various biochemical tests for Gram-negative organisms, as well as those for identification of non-fermenters were carried out. Indole and Methyl Red tests were negative, Citrate was not utilized, Urease was produced, Triple Sugar Iron medium showed non fermentative pattern with plenty of H2S, Lysine Decarboxylase and Arginine Dehydrodase were negative, while Ornithine Decarboxylase was positive. Hugh-Leifson’s Oxidative Fermentative test showed an Asaccharolytic pattern (Figure 5). Antibiotic Susceptibility Testing was carried out by Modified Kirby - Bauer Disk Diffusion Method. Drugs were applied in accordance with CLSI 2020 M-100 manual (Figure 4). Sensitive pattern was found in all antibiotics tested; classes like Aminoglycosides, Cephalosporins, Penicillin derivatives, Fluoroquinolones, non-ribosomal peptides were tested. Detailed sensitivity pattern is denoted in Table 1.
**Figure 1**: Growth of *Shewanella algae* on Blood agar showing Orange-brown colonies with zone of hemodigestion.

**Figure 2**: Non-Lactose-Fermenting colonies of *Shewanella algae* on MacConkey’s Agar.

**Figure 3**: Non-Sucrose-Fermenting colonies of *Shewanella algae* on TCBS Agar.

**Figure 4**: Antibiotic Sensitivity Pattern of *Shewanella algae*.
The genus Shewanella consists of two species, S. putrefaciens and S. algae. Initially they were classified into Pseudomonas species, but diverse genetic and metabolic characteristics have resulted their reclassification. S. algae is found to be more closely related to human illnesses than S. putrefaciens. The reason for the difference in pathogenicity is hypothesized to some hemolytic factors that are expressed by S. algae and not by S. putrefaciens. Shewanella algae is said to be a marine pathogen, the natural habitat being water of all types, and fish. Essentially, it causes disease in warm summers of temperate climates. Consequently, it is extremely uncommon for them to be isolated from clinical samples. The rare occurrence of such isolates makes the definition of a reference phenotype very difficult, and unavailability of markers in automated databases caused spurious association of human diseases to S. Putrefaciens in the past. S. algae has previously been isolated from skin and soft tissue infections like cellulitis, with bacteremia being the most common complication.

IV. Conclusion
This case of infection caused by S. algae indicates that unusual pathogens should also be considered, even when isolating organisms from a common condition. Despite the conducive sensitivity to antimicrobials, they both should probably be regarded as emerging opportunistic pathogens, especially in immunosuppressed patients, or patients in extremes of age.
V. References