

Short Communication

# The Role of Caseous Necrosis in Cervical Tuberculosis

#### Olsen Ashe<sup>\*</sup>

Department of Pathology and Laboratory Medicine, University of Texas, Houston, Texas, USA

## DESCRIPTION

Cervical tuberculosis, a manifestation of extra pulmonary tuberculosis, predominantly affects the lymph nodes in the neck region. It is a significant health concern, especially in regions where Tuberculosis (TB) is endemic [1]. One of the standard features of cervical tuberculosis is caseous necrosis, a form of cell death that creates a distinctive pathological appearance in the affected tissues. Tuberculosis is caused by Mycobacterium tuberculosis, a bacterium that primarily affects the lungs but can spread to other parts of the body, leading to extra pulmonary tuberculosis [2]. When the bacteria infect the cervical lymph nodes, it results in cervical tuberculosis, also known as scrofula. This condition is more common in children and immunocompromised individuals, such as those with HIV/ AIDS. Caseous necrosis, or caseous necrosis, is a type of cell death associated with a cheese-like appearance of the affected tissue.

It is characterized by a combination of cell death, necrosis, and granulomatous inflammation. The process begins with the invasion of mycobacterium tuberculosis into the lymph nodes, prompting an immune response [3]. Macrophages, a type of white blood cell, attempt to engulf and destroy the bacteria. However, *M. tuberculosis* can survive within these cells, leading to the formation of granulomas, which are clusters of immune cells attempting to contain the infection. Within these granulomas, the centre undergoes necrosis due to the persistent immune response and the toxic environment created by the bacteria and immune cells [4]. The necrotic tissue becomes soft and friable, resembling cottage cheese, hence the term "caseous" necrosis. This necrotic core is surrounded by a layer of macrophages, multinucleated giant cells, and lymphocytes, forming a granulomatous structure [5].

#### Clinical presentation and diagnosis

Patients with cervical tuberculosis typically present with swollen lymph nodes in the neck, which may be tender or painless [6]. The nodes may adhere to the skin or deeper tissues and can

sometimes form abscesses that drain through the skin, producing a sinus tract. Other symptoms can include fever, night sweats, weight loss, and general malaise, reflecting systemic involvement of TB [7]. The diagnosis of cervical tuberculosis involves a combination of clinical evaluation, imaging studies, and laboratory tests. Fine Needle Aspiration Cytology (FNAC) or biopsy of the affected lymph nodes can reveal the characteristic caseous necrosis and granulomatous inflammation [8]. Acid-Fast Bacilli (AFB) staining and culture can confirm the presence of Mycobacterium tuberculosis. Molecular tests, such as Polymerase Chain Reaction (PCR), can also be used for rapid and specific detection of TB bacteria. With appropriate treatment, the prognosis for patients with cervical tuberculosis is generally good [9]. However, delayed diagnosis and treatment can lead to complications, such as extensive tissue damage, scarring, and the formation of sinus tracts. Public health efforts to control TB, including vaccination, early detection, and effective treatment, are important in reducing the incidence of both pulmonary and extra pulmonary tuberculosis [10].

### CONCLUSION

Non-tuberculous mycobacterial disease is a common and significant complication in patients with non-cystic fibrosis bronchiectasis. Its presence can exacerbate lung damage and complicate the clinical management of NCFB. Early recognition, accurate diagnosis, and appropriate treatment are critical to improving patient outcomes. Continued research and awareness are necessary to better understand the epidemiology, pathogenesis, and optimal management strategies for NTM infections in this vulnerable patient population.

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Correspondence to: Olsen Ashe, Department of Pathology and Laboratory Medicine, University of Texas, Houston, Texas, USA, Email: olsene246@acu.in

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