

Granuloma Inguinale

Granuloma inguinale, also known as donovanosis, is a rare, sexually transmitted infection (STI) caused by the bacterium *Klebsiella granulomatis*. Although uncommon in developed countries, this infection is endemic in tropical and subtropical regions, particularly in parts of Africa, Asia, the Caribbean, New Guinea, and South America. The disease is characterized by genital ulcerations, disfiguring scars, and in some cases, significant morbidity due to complications such as genital elephantiasis (severe, persistent swelling) and strictures.

Pathophysiology and Transmission

Granuloma inguinale is primarily transmitted through sexual contact, and clinical infection occurs after repeated exposure to *Klebsiella granulomatis*. The bacterium infects mucosal and cutaneous surfaces, leading to local tissue damage. Unlike many other STIs, *Klebsiella granulomatis* has a predilection for causing painless, progressive ulcerations that can result in extensive tissue destruction if left untreated. The bacterium is also known to stimulate a local inflammatory response, which may cause lymphatic swelling and eventual fibrosis, leading to genital scarring and potential complications.

Granuloma inguinale is more common in regions with low socioeconomic conditions, where poor hygiene and limited access to healthcare contribute to higher rates of infection. In contrast, it is relatively rare in high-income countries, though cases may occur in individuals who travel to endemic areas.

Clinical Presentation

The clinical presentation of granuloma inguinale is distinct, with lesions typically starting as soft, papular growths in the genital area. These lesions rapidly progress into fleshy, ulcerative masses with a characteristic appearance. The ulcerations are typically painless and may be described as a "beefy red" mass, often with irregular borders. Over time, the lesion may become large and infiltrative, and in untreated cases, it can lead to significant scarring, fibrosis, and functional impairment of the genital organs.

Key clinical features include:

- **Painless Ulcers:** The initial lesion is typically a soft, papular bump that ulcerates, forming a fleshy, painless mass. The ulcer can progress to large, raw areas of tissue.
- **Progressive Involvement:** The infection can spread to adjacent skin or mucosal surfaces, leading to the formation of additional lesions.

- **Complications:** Without treatment, granuloma inguinale can lead to severe complications such as anogenital strictures, massive genital swelling (elephantiasis), and, in rare cases, carcinoma.

In advanced cases, the infection may result in extensive genital damage, including permanent scarring and deformity. Although rare, squamous cell carcinoma has been reported in long standing cases, particularly those involving chronic inflammation.

Diagnosis

The diagnosis of granuloma inguinale is challenging due to the difficulty in isolating *Klebsiella granulomatis* from clinical samples. Traditional culture methods are not reliable, as the organism is difficult to grow in standard laboratory conditions. Therefore, diagnosis is most commonly made through direct microscopic examination of smears taken from the base of the ulcer or lesion.

The hallmark of diagnosis is the identification of Donovan bodies, which are intracellular inclusion bodies found within the cytoplasm of infected cells. These bodies are typically seen upon examination of Giemsa- or Wright-stained smears under the microscope. Donovan bodies appear as small, dark-staining clusters of bacteria, often surrounded by a halo. In some cases, molecular techniques such as PCR (polymerase chain reaction) may be used to confirm the presence of *Klebsiella granulomatis*, especially in atypical cases or when microscopy is inconclusive.

Treatment

The treatment of granuloma inguinale is primarily antimicrobial. The goal of therapy is to eradicate the infection, prevent complications, and minimize scarring. The Centers for Disease Control and Prevention recommends the following treatment options for granuloma inguinale:

- **First-Line Antibiotics:** The preferred antibiotics for treating granuloma inguinale are trimethoprim-sulfamethoxazole (TMP-SMX) or doxycycline, both of which are effective in eradicating *Klebsiella granulomatis*. Treatment should be continued for at least 21 days or until the resolution of clinical symptoms.
- **Alternative Antibiotics:** In cases where TMP-SMX or doxycycline cannot be used, alternatives such as erythromycin or ciprofloxacin may be prescribed. These antibiotics also demonstrate efficacy against the causative bacterium.
- **Special Considerations for Pregnant Women:** Erythromycin is the preferred treatment for pregnant women due to its safety profile during pregnancy. Both TMP-SMX (during first and third trimesters) and doxycycline are contraindicated in pregnancy, as they may cause adverse effects such as teratogenicity and fetal harm.

It is essential that all sexual partners who have had contact with the infected individual within the last 60 days be treated, regardless of whether they show symptoms. This helps to prevent reinfection and the spread of the disease.

Management of Complications

In cases of advanced granuloma inguinale with significant scarring or genital elephantiasis, surgical intervention may be necessary to manage complications such as strictures or deformities. Plastic or reconstructive surgery may be required for patients who develop chronic sequelae, such as severe tissue fibrosis or loss of function. Additionally, patients with chronic or recurrent infection should undergo long-term follow-up to monitor for potential complications, including the rare development of cancer.

Prognosis

Granuloma inguinale is a treatable condition, and with appropriate antibiotic therapy, most patients recover without significant long-term sequelae. However, if left untreated or inadequately treated, the infection can lead to severe tissue destruction, scarring, and complications such as genital elephantiasis or anogenital strictures. The prognosis is generally favorable with early intervention, though complications may persist in cases of delayed diagnosis or inadequate therapy.

Conclusion

Granuloma inguinale is a rare but significant sexually transmitted infection that requires prompt diagnosis and treatment to prevent complications. Caused by *Klebsiella granulomatis*, the disease is characterized by painless, ulcerative lesions that can lead to substantial morbidity, including genital deformities and, rarely, cancer. The diagnosis is typically made by identifying Donovan bodies on smear, and treatment with antibiotics such as TMP-SMX or doxycycline is effective in most cases. For pregnant women, erythromycin is recommended. Early treatment, proper follow-up, and education on sexual health are critical to managing and preventing the spread of this infection.

References

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