

# Haemophilus its environmental temperature. isolation of the bacteria



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Haemophilus ducreyi: Cause and Effect Chandni Patel and Brenda Perkins ECPI

University Abstract Haemophilus ducreyi is a gram-negative coccobacillus pathogen. It is considered to be a fastidious facultative anaerobic bacterium. The culture medium used to diagnose the H. ducreyi bacteria in Chancroid is chocolate agar. After culturing it can appear to be representative of a “school of fish”. Chancroid is a sexually transmitted disease that causes Chancroid. It is opportunistic and infects its host through breaks in the skin.

The incidence has decreased over the years and is now mainly found in underdeveloped and third world countries such as Africa and the Caribbean. Chancroid is not life-threatening, however, is treatable with the correct antibiotics. Haemophilus ducreyi: Cause and Effect Haemophilus ducreyi is a gram-negative coccobacillus facultative anaerobic bacterium that is fastidious nutritionally. (Science Direct, 2015) H. ducreyi is a small organism that is sensitive to its environmental temperature. Isolation of the bacteria is very difficult, and it is a very slow growing organism.

Its shape refers to the rod-shaped bacteria that is very short which makes it appear to be cocci shaped as well. It is an opportunistic bacterium in that it enters a host through a break in the skin of some sort. Bacteria then begins to attack the cells causing inflammation. Damage to the cells is done by toxins called Cytolethal distending toxins.

(Microbewiki, 2012). These are proteins that act inside the cell to interfere with the cell cycle of eukaryotic cells. The toxins have proteins that enter the nucleus of the cell causing fragmentation of the nucleus as well as the disintegration of chromatin. From Pathogen to Disease H. ducreyi is the

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pathogen that causes a sexually transmitted disease called Chancroid. This bacteria enters the small abrasions or breaks in the skin during sexual intercourse. (Public Health Agency of Canada, 2010) It presents with a pustule at approximately three to ten days after incubation followed by painful genital ulcers after a pustule ulcerates.

(Pierre J. Plourde, 2017) The ulcers are usually located on the prepuce and coronal sulcus of males and the outer areas of the vagina in women. Approximately 50% of patients experience painful inguinal lymphadenitis while in the ulcerative stage also called bubo formation. (Buensalido, 2017) *H. ducreyi* is also recently been associated with transmission of HIV. Little is known about *H. ducreyi* and skin ulcers in children in the South Pacific regions of the world but has been newly identified as the bacteria causing them.

**Signs and Symptoms**The disease caused by *H. ducreyi* is known as Chancroid. Chancroid is a sexually transmitted disease that commonly occurs in third world countries where proper hygiene is difficult to achieve, like some parts of Africa. Signs of Chancroid start showing about four to seven days after exposure.

Symptoms are different in men and women. In men, small, red bumps appear on the genital area that changes to open sores within one to two days. They can be located in the penis and scrotum area and they are very painful. For women, they can have four or more small, red bumps present on the vulva, cervix, perianal, labia, or between the labia and the anus. After the bumps become ulcerated the women will have pain when she urinated or

has a bowel movement. Other symptoms that are seen in both genders are lesions around the breast, fingers, inner thigh, swelling of the groin, and swelling of the lymph nodes.

The lymph nodes can swell up and out of the skin filled with pus and blood (Macon, 2017). Diagnosis Chancroid is a sexually transmitted disease that is caused by the bacteria *H. ducreyi*. *H.*

*ducreyi* is a gram-negative bacterium that necrotized genital ulceration and is usually accompanied by lymphadenitis. It is believed, not proven, that *H. ducreyi* initiates an infective process within the skin of the genital forming epidermal microabrasions during sexual intercourse. Four to seven days after exposure, a tender erythematous papule develops which progresses to a pustular stage.

The papule formation is approximately 30 colonies per unit with a 95% of formation rate. The colony rate per unity is the same per unit for a pustule, however, it has a 69% formation rate. After the pustular stage, the red bumps found in the genital area rupture two to three days after forming shallow, painful ulcers with granulomatous and purulent exudate (Lewis, 2003). *H. ducreyi* is a bacteria that creates a sexually transmitted disease that is horrific, however, it can be treated with the right medications and recommendations by doctors. Treatments Individuals that have been diagnosed with Chancroid have options of treatments and medications that are regulated by the WHO, CDC, and the United Kingdom Clinical Effectiveness Group (CEG). These three organizations have a recommendation of medication and the dosages that they need to be

consumed in. Erythromycin is the first medication that is recommended by WHO.

They recommend that the individual take 500 milligrams, three times a day for seven days by mouth. However, CDC and CEG recommend that individual orally take 500 milligrams of Erythromycin four times a day for seven days. Another medication is Azithromycin that is recommended by CDC and CEG to be consumed in a single dose of 1 gram by mouth. Ceftriaxone is also a Chancroid medication that is giving in 250 grams in a single dose intramuscularly, which is recommended by all three organizations.

Lastly the Ciprofloxacin therapy is a treatment that is recommended by WHO and CDC, however, they both have different dosage preferences that an individual should consume. WHO recommends 500 milligrams by mouth three times a day whereas CDC recommends two doses of 500 milligrams by mouth three times a day. There was a controlled trial held in Kenya, Africa that a single dose of Ciprofloxacin was given for a week and it had the cure rate of 92% of effectiveness. This result was in contrast to Erythromycin which was given the same way as Ciprofloxacin and its cure rate was 91% of effectiveness. It is highly suggested that pregnant women consume Erythromycin and Ceftriaxone instead of the treatment. As the treatment was successful, it had some failures too. The failure rate increases in individuals who were uncircumcised and who were Africans.

(Lewis, 2003)ConclusionIn conclusion, Haemophilus ducreyi is a gram-negative coccobacillus pathogen that is considered to be a fastidious facultative anaerobic bacterium. H. ducreyi causes the sexually transmitted

disease known as Chancroid. This bacteria enters through small abrasions or breaks in the skin during sexual intercourse (Public Health Agency of Canada, 2010). It then presents with a pustule at approximately three to ten days after incubation followed by painful genital ulcers after a pustule ulcerates (Pierre J.

Plourde, 2017). Some signs and symptoms include red bumps around the genitalia, lymphadenitis, swelling of the groin, and painful ulcerations. Some other symptoms are lesions in the breast, fingers, and inner thighs (Macon, 2017). As painful as Chancroid sounds, it does have a cure for it in forms of medication and therapy. Some of the medications available are Erythromycin, Azithromycin, Ceftriaxone, and the Ciprofloxacin therapy. These medications and treatments have been approved by WHO, CDC, and United Kingdom's CEG. Also, there was a controlled trial that was done in Kenya, Africa with the successful cure rates of 92%, however, there was some failure with medication/treatment with some individuals who were circumcised and who were African (Lewis, 2003).

H. ducreyi is a bacteria that is bad for the human body, but it is treatable, despite its difficult attempts to cultivate it. References Buensalido, J. C. (2017, 05 15). Medscape. Retrieved from emedicine.

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