REVIEW ARTICLE

CULTURE OF THROAT SWAB: FOR TESTING DISORDERS

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Abstract:

A throat culture, also known as a throat swab culture, is a diagnostic test to detect bacterial or fungal infections in the throat. A sample is collected using a cotton swab and analyzed in a lab. Results are available in 2–7 days, helping doctors prescribe appropriate treatment for recovery.

Keywords: Throat Swab, Culture, Disorders.

Introduction:

A throat culture, often known as a throat swab culture, is a test used to detect the presence of bacteria or fungi in the back of your throat. This procedure helps your healthcare professional diagnose infections. During the test, your healthcare provider uses a cotton swab to gently rub the back of your throat and collect a sample of cells. This sample is then sent to a laboratory. At the lab, a technician mixes the sample with specific chemicals to check for the growth of bacteria or fungi. The test results are usually available within two to seven days. Based on the results, your doctor may prescribe medication to help you recover from the infection.

Need of throat culture:

It is a kind of bacterial culture test. Many times sore throats are caused by viruses. However, sore throats are sometimes caused from bacterial and fungal diseases. For example, strep throat is caused by an infection with the bacterium group A Streptococcus.

What is diagnosed by a throat culture:

A throat culture to diagnose conditions, including:

1. **Diphtheria:**

- **Cause & Transmission**: Diphtheria is caused by *Corynebacterium diphtheriae* and spreads via respiratory droplets or direct contact with infected surfaces.
- **Global Incidence**: The disease has decreased significantly in areas with high vaccination rates but still occurs in regions with low vaccine coverage, particularly in parts of Africa, Southeast Asia, and Eastern Europe.
- **At-Risk Groups**: Unvaccinated children, immunocompromised individuals, and those in poor living conditions are most at risk.
- **Vaccination**: The DTP vaccine has dramatically reduced cases globally, but outbreaks still occur in areas with low vaccination rates or healthcare systems in crisis.
- **Complications**: Diphtheria can cause severe respiratory problems, myocarditis, and even death if untreated.
- **Prevention**: Vaccination, early treatment with diphtheria antitoxin and antibiotics,

and strong surveillance systems are key to controlling the disease.

2. Rheumatic fever or scarlet fever:

Rheumatic Fever:

- **Cause**: Follows an untreated *Group A Streptococcus* throat infection.
- **At-Risk**: Mostly children (ages 5-15), especially in low-income areas.
- **Complications**: Can cause heart damage (rheumatic heart disease) and joint issues.
- **Prevention**: Treat strep throat early with antibiotics.

Scarlet Fever:

- **Cause**: Caused by *Group A Streptococcus* toxin after a strep throat infection.
- **At-Risk**: Mostly children under 10.
- **Complications**: Can lead to rheumatic fever or kidney problems if untreated.
- **Prevention**: Early antibiotic treatment of strep throat prevents it.

3. Strep throat (bacterial tonsillitis):

- **Cause**: Caused by *Group A Streptococcus*.
- **Transmission**: Spread through respiratory droplets.
- **At-Risk**: Primarily children (ages 5-15), especially in close-contact settings.
- **Symptoms**: Sore throat, fever, swollen tonsils.
- **Complications**: Can lead to rheumatic fever or kidney problems if untreated.
- **Prevention**: Good hygiene and early antibiotic treatment (e.g., penicillin).

4. Whooping cough (pertussis):

- **Cause**: caused by *Bordetella pertussis*, is a highly contagious respiratory disease.
- **Prevalence**: Cases have risen in some areas, especially among unvaccinated individuals, adolescents, and adults with waning immunity.
- **Risk Factors**: Unvaccinated individuals, infants (under 1 year), and those with incomplete vaccination are at higher risk.
- **Transmission**: Spread through respiratory droplets via coughing or sneezing.
- **Most Affected**: Infants under 6 months are most at risk for severe disease, but adolescents and adults can still spread it.

Processing of throat swab for culture:

Specimen collection

Swabs should be collected by a medical officer or by an experienced technician.

1) Patient should be examined in good light.

2) Use handle of a spoon to depress the tongue.

3) Examine the inside of the mouth. Look for inflammation, exudate, pus or presence of any membrane.

Disease	Observation
Diphtheria	Greyish-yellow membrane extending over the soft palate and backwards onto the pharyngeal wall
Streptococcal sore throat	Tonsils are covered with yellow spot and are inflamed
infectious mononucleosis	Exudate

4) Swab the affected area by using a sterile cot-ton swab. Prevent contamination with saliva. Swab the affected area and return it to the sterile container. Collect two swabs.

Additional care:

1) Patient should not be treated with antibiotics or antiseptic mouth washes (gargles) for at least eight to twelve hours before swabbing.

2) It can be dangerous to swab the throat of a child with acute Hemophilus epiglottitis. (It may cause spasm that can obstruct child's air-way). Blood should be collected for culture.

3) Laboratory investigations should be per-formed within two hours of the swab collec-tion.

Laboratory Examinations:

FIRST DAY

1) Perform Gram staining on the evenly spread smear of the specimen on a slide. Examine the

smear for (a) pus cells and (b) Vincent's organisms (Gram negative spirochetes).

Note: The throat contains a wide variety of commen-sals which make differentiation of other patho-gens difficult.

2) If diphtheria is suspected, look for pleomor-phic rods. Commensal diphtheroids show little variation in shape and size.

3) Stain one smear by Albert's staining tech-nique (If diphtheria is suspected).

Culturing the specimen:

Inoculate on (a) blood agar (b) If diphtheria is suspected inoculate on Tellurite Blood agar, (c) Inoculate on Sabouraud agar if thrush is suspected (Can-dida infection).

SECOND DAY ONWARDS

Examine the following:

1) Blood agar culture especially for beta hemolytic Streptococci.
2) TBA culture for Corynebacterium diphtheriae
3) Examine Sabouraud culture for Candida albicans.
4) Perform biochemical tests to confirm the re-sults.

Conclusion:

Accurate throat culture results provide crucial information for diagnosing infections and guiding appropriate treatment, improving patient outcomes and reducing the risk of complications.

References:

1. Orsud, H. S., Mergani, A. E. O., Elsanousi, S. M., & Mohasmmed, G. E. (2020). Isolation, identification and biochemical profile of *Streptococcus pyogenes* from sore throat. *Sudan Journal of Science and Technology*, *21*(1). https://doi.org/10.xxxxx (Note: Add DOI if available)
2. Naughton, P., Healy, M., Enright, F., & Lucey, B. (2021). Infectious mononucleosis: Diagnosis and clinical interpretation. *British Journal of Biomedical Science*, *78*(3), 107–116. https://doi.org/10.1080/09674845.2021.1903683
3. Riley, P. A. (2013). Principles of microscopy, culture and serology-based diagnostics. *Medicine*, *41*(11). https://doi.org/10.xxxxx (Add DOI or URL if available)
4. Dubourg, G., & Fournier, P.-E. (2017). Advances in diagnostic microbiology. In *Infectious Diseases* (4th ed., pp. xxx–xxx). Elsevier. https://doi.org/10.xxxxx (Include page numbers and DOI if available)
5. Okinaka, R. T., Hill, K. H., Pearson, T., Foster, J. T., Vogler, A. J., Tuanyok, A., Wagner, D. M., & Keim, P. S. (2011). Forensic analysis in bacterial pathogens. In *Microbial Forensics* (2nd ed.). Academic Press. ISBN 9780123820068
6. Kenealy, T. (2011). Sore throat. *BMJ Clinical Evidence*, *2011*, 1509. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3275136/
7. Ross, P. W. (1977). The isolation of *Streptococcus pyogenes* from throat swabs. *Journal of Medical Microbiology*, *10*(2).