NutriPATH
INTEGRATIVE PATHOLOGY SERVICES
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NICOLA TEO
22-Feb-1995 Female

2/55 SIR THOMAS MITCHELL ROAD
BONDI BEACH NSW 26

-.ALEXANDRA MIDDLETON
6 EDWARDS BAY ROAD
MOSMAN NSW 2088

LAB ID : 3819589
UR NO. : 6607790
Collection Date : 25-May-2022
Received Date:02-Jun-2022

3819589

Vaginal Microbiome Profile

Vaginal pH.	5.0 *H	3.5 - 4.5

Opportunistic Bacteria	Result	Range	Units
Enterococcus faecalis:	<DL	< 1.0	x10^5 CFU/ml
Escherichia coli:	<DL	< 1.00	x10^5 CFU/g
Klebsiella pneumoniae:	<DL	< 1.00	x10^5 CFU/ml
Proteus mirabilis:	<DL	< 1.00	x10^5 CFU/ml
Pseudomonas aeruginosa:	<DL	< 1.00	x10^5 CFU/ml
Streptococcus agalactiae:	<DL	< 1.00	x10^5 CFU/ml
Staphylococcus aureus:	<DL	< 1.00	x10^5 CFU/ml
Gardnerella vaginalis:	14.16 *H	< 1.00	x10^5 CFU/ml
Atopobium vaginae:	15.72 *H	< 1.00	x10^5 CFU/ml
Prevotella species:	<DL	< 1.00	x10^5 CFU/ml
Megasphaera species:	38.65 *H	< 1.00	x10^5 CFU/ml
Ureaplasma species	9.23 *H	< 1.00	x10^6 CFU/ml
Mycoplasma species	10.44 *H	< 1.00	x10^6 CFU/ml

Sexually Transmitted Infections	
Trichomonas vaginalis:	Not Detected
Chlamydia trachomatis:	Not Detected
Neisseria gonorrhoeae:	Not Detected
Herpes Simplex Virus-1:	Not Detected
Herpes Simplex Virus-2:	Not Detected

COMMENT:
Not Detected results indicate the absence of detectable DNA in this sample. A negative result does not completely exclude infection.

Opportunistic Fungal pathogens			
Candida albicans:	<DL	< 1.00	x10^5 CFU/ml
Candida glabrata:	<DL	< 1.00	x10^5 CFU/ml
Candida krusei:	<DL	< 1.00	x10^5 CFU/ml
Candida parapsilosis:	<DL	< 1.00	x10^5 CFU/ml
Candida tropicalis:	<DL	< 1.00	x10^5 CFU/ml

Beneficial Bacteria:			
Total Lactobacillus:	<DL *L	> 1.00	x10^6 CFU/ml
Lactobacillus crispatus:	<DL *L	> 1.00	x10^6 CFU/ml
Lactobacillus gasseri:	<DL *L	> 1.00	x10^6 CFU/ml
Lactobacillus iners:	<DL *L	> 1.00	x10^6 CFU/ml
Lactobacillus jensenii:	<DL *L	> 1.00	x10^6 CFU/ml
Lactobacillus rhamnosus:	<DL *L	> 1.00	x10^6 CFU/ml
Lactobacillus salivarius:	<DL *L	> 1.00	x10^6 CFU/ml
Lactobacillus vaginalis:	<DL *L	> 1.00	x10^6 CFU/ml

Bacterial Vaginosis:	
Bacterial vaginosis	POSITIVE

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Vaginal Microbiome Comments

VAGINAL pH ELEVATED:
Vaginal pH can be elevated by the presence of pathogenic infection, blood, semen, vaginal medications, using certain soaps and douches. In the absence of the latter, an elevated pH may be the result of decreased serum oestradiol and is suggestive of menopause or hormone imbalance and may require further pathology investigation.
The typical vaginal pH is 3.5-4.5. Prepubertal and postmenopausal pH levels are normally >5 pH. With the increase of the oestrogen levels around puberty, the genital mucosa thickens and becomes colonized with Lactobacillus species which produce lactic acid and hydrogen peroxide to lower the pH below 4.5.
References:
Caillouette et. al., 1997, American Journal of Obstetrics and Gynaecology, 176(6)1270-1277.
Panda et. al., 2014, Journal of Mid-Life Health, 5(1):34-37.
Kaambo et. al., 2018, Front Public Health, 6:78.

BACTERIAL VAGINOSIS COMMENTS:
Bacterial Vaginosis (BV) may be asymptomatic or cause symptoms such as itching and malodorous discharge (often thin and white/grey). It is associated with an increased risk of preterm delivery, pelvic inflammatory disease and an increased risk of acquisition of sexually transmitted infections. Risk factors include poor sexual hygiene, cigarette smoking or hormone dysregulation.

GARDNERELLA VAGINALIS ELEVATED:
Gardnerella is a part of normal vaginal anaerobic flora but overgrowth can cause Bacterial vaginosis. This is a poly-microbial infection which suppresses dominance of normal vaginal lactobacillus spp. (Total lactobacillus <10^6 CFU/ml), presence of clue cells, alkaline vaginal pH (>4.5) and fishy vaginal discharge.
BV may be asymptomatic or cause symptoms such as itching and malodorous discharge (often thin and white/grey). It is associated with an increased risk of preterm delivery, pelvic inflammatory disease and an increased risk of acquisition of sexually transmitted infections.

Can be treated after ruling out allergy/pregnancy status:
Metronidazole 400 mg orally, 12-hourly for 7 days or Metronidazole 0.75% vaginal gel 1 applicatorful intravaginally at bedtime for 5 nights
OR
Clindamycin 2% vaginal cream 1 applicatorful intravaginally, at bedtime for 7 nights (If pregnant or allergic to metronidazole)

General advice for along with above treatment as follows:
o Regular salt or warm water only washes (no douching)
o Good Personal Hygiene
o Avoid irritants (soaps/perfumes)
o Use barrier protection during sex

ATOPOBIUM VAGINAE ELEVATED:
Atopobium vaginae is a gram-positive facultative anaerobic bacterial species that may be involved in BV in some women as a result of a disruption in the normal vaginal microflora.
BV is typically a polymicrobial infection characterized by disruption in Lactobacillus dominance (Total Lactobacillus <10^6 CFU/ml), increased pH (>4.5) and the presence of mainly anaerobic microorganisms including Atopobium vaginae (>10^5 CFU/ml).

MEGASPHAERA SPECIES ELEVATED:
Megasphaera are gram-negative anaerobic bacteria, part of Clostridia genus often found as part of the oral and vaginal microbiota. The presence of high number of Megasphaera species may be an indicator of vaginal flora imbalances or infections. BV is typically a polymicrobial infection characterized by disruption in Lactobacillus

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dominance (Total Lactobacillus <10^6 CFU/ml), increased pH (>4.5) and the presence of mainly anaerobic microorganisms including Megasphaera sp. (>10^5 CFU/ml).

Mycoplasma and Ureaplasma Species
Mycoplasmas and Ureaplasmas species colonise lower genital tract of many healthy sexually active individuals. Clinically act as opportunistic bacteria, associated with mucosal infections of the respiratory and urogenital tracts. Mycoplasmas and Ureaplasma species can cause sexually transmitted infections like bacterial vaginosis (BV), cervicitis, PID, infertility in non-pregnant females and chorioamnionitis, endometritis, postpartum fever, premature birth or spontaneous abortion in pregnancy and urethritis in males. Sexual contacts should be encouraged to be tested and treated simultaneously to prevent recurrence in the patient.

Both organisms lack cell wall hence beta lactam antibiotics are not effective. Macrolides and Quinolones are effective but anti-microbial resistance is creeping.

General advice for along with above treatment as follows:
o Regular salt or warm water only washes (no douching)
o Good Personal Hygiene
o Avoid irritants (soaps/perfumes)
o Use barrier protection during sex

LACTOBACILLUS:
Lactobacillus is the predominant genus in a healthy vaginal microbiota, and functions to inhibit the adhesion and proliferation of opportunistic and primary pathogens.
The presence of different Lactobacillus species is a major factor in the stability of the vaginal microbiome. Women with L. iners-dominant microbiomes are more likely to harbor Candida than women with L. crispatus-dominant microbiomes (due to higher production of lactic acid by L. crispatus compared to L. iners), leading to better anti-Candida activity (impeding Candida colonization) than L. iners through a greater production of lactic acid. Furthermore, L. iners dominance has been associated with other negative health outcomes such as increased risks of Chlamydia trachomatis infection, incident Bacterial Vaginosis and defects in vaginal mucus that compromise antiviral barrier function.

TOTAL LACTOBACILLUS LEVELS LOW:
Total Lactobacillus quantification should be >1x10^6 CFU/ml in a healthy Vaginal Microbiome. Production of H2O2 by Lactobacillus species is essential in inhibiting the overgrowth of pathogens. In cases where total Lactobacillus levels are low, presence of pathogenic bacteria should be reviewed and probiotic therapy should be considered. Microorganisms not belonging to the Lactobacillus genus with the population equal to or greater than 1× 10^5 CFU/ml is considered to be disturbing the vaginal ecosystem equilibrium.
References:
Pacha-Herrera et. al., 2020, Frontiers in Cellular and Infection Microbiology, 10:303.
Oerlemans et. al.,2020, Europe PMC, 10(11).
Tomusiak et. al., 2013, Polish Society of Gynaecologists, 84:352-358.

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Sex. Transmitted Infection Comments

TRICHOMONAS VAGINALIS – Not Detected:
This does not completely exclude the possibility of infection as is dependent on an adequate specimen collection. If you have symptoms, please consult with your healthcare practitioner.

CHLAMYDIA TRACHOMATIS – Not Detected:
This does not completely exclude the possibility of infection as is dependent on an adequate specimen collection. If you have symptoms, please consult with your healthcare practitioner.

NEISSERIA GONORRHOEAE – Not Detected:
This does not completely exclude the possibility of infection as is dependent on an adequate specimen collection. If you have symptoms, please consult with your healthcare practitioner.

HERPES SIMPLEX VIRUS Type 1 – Not Detected:
This does not completely exclude the possibility of infection as is dependent on an adequate specimen collection. If you have symptoms, please consult with your healthcare practitioner.

HERPES SIMPLEX VIRUS Type 2 – Not Detected:
This does not completely exclude the possibility of infection as is dependent on an adequate specimen collection. If you have symptoms, please consult with your healthcare practitioner.

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