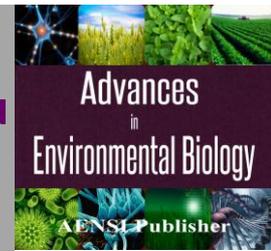




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Comparison of three methods for *Trichomonas vaginalis* prevalence Dorset, Diamond and PCR

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ABSTRACT

Trichomonas vaginalis is a flagellate protozoan of the urinary tract - reproductive life and is one of the most common non-viral sexually transmitted disease that causes trichomoniasis in women can cause disease. The purpose of this study was to evaluate the prevalence of *Trichomonas vaginalis* with culture method is both demanded and Diamond. So the 150 women referred to health centers in Kermanshah, obtaining information and preparing the way, by Speculum and cotton swabs, vaginal secretions samples were kept in glucose solution. Of 150 women with suspected trichomoniasis in two braids 8 positive approach (33/5 %) and the Diamond Method 10 (67/6) was positive. Our findings indicate that positive cases in the age group 20 to 35 years. This age group has the highest relative abundance, and those who had lower levels of education and literacy, pollution is greater.

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INTRODUCTION

Trichomonas vaginalis was first isolated from a woman normal vaginal secretion who was suffering from acute vaginitis in 1836 by a French scientist named Donne. Pathogenesis of this parasite was identified by Hoehne in 1916, which proved that the parasite is not a vaginal commensal but, as a pathogen causes vaginitis typical. Trichomonad is a parasite of an order of *Trichomonas* genus [8].

Trichomonas genus has numerous species in the intestine of mammals, including humans, birds, amphibians, termites and in monkeys and humans' mouth as well as the genital tract of humans, cattle and pigs.

Trichomonas involved a group of protozoa flagellate without cysts and with trophozoite almost pear-shaped and sized 30 to 40 micrometer, the anterior is round and flat, and the posterior is narrow and somewhat sharp. The protozoan has a nucleus and 3 to 5 free anterior flagellum with an undulating membrane flagella attached to the posterior par [3].

Trichomonas vaginalis is a strong anaerobic that is not able to reproduce except in anaerobic conditions. *Trichomonas* reproduces every 8 -12 hours in the perfect environment by mitosis or binary cell division (fission). The best PH is 5- 6 for its growth.

The parasite is sexually transmitted. Organisms only can live on the anterior vaginal squamous cells, ureter in women and prostate gland and ureter in men. Trichomoniasis of this protozoan is the most common cause of urogenital infection by humans, and humans are the only known host of this parasite [1,2].

Laboratory methods used for the detection of *Trichomonas vaginalis* in both males and females briefly are as follows: A - Direct microscopic examination of samples; B – Culturing; C – Molecular methods

Methods :

Sampling: In this descriptive and analytical study, a sample of 150 women referred to gynecology clinic of Kermanshah Province since April 2011 has been studied. In women's Clinic, all women with vaginitis symptoms have been asked questions about the symptoms, age, type of discharge and contraceptive methods and data were collected on special forms. After being in lithotomic condition (appropriate condition to check genitalia) expert obstetric using vaginal specula fixed on cervix simultaneously takes samples of discharges

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from posterior vaginal fornix used applying cotton swab applicator under the supervision of parasitological professionals; then discharges have been transferred into a test tube with 2 ml sugar - salt solution and the tube was capped with cotton.

Dorset and Diamond medium were prepared according to standards. After obtaining a sample, swab was transferred into culture and maintained at 37 ° C for a period of 24-48-72 hours. Then samples were obtained from the bottom of the tube using Pastor Pete tip. In Dorset and Diamond medium, ROMs supplied with the lens were studied by micro-lens optic, 40. Trichomonas positive samples can be recognized clearly by the parasite motions and morphological features.

Results:

-The percentage of infection obtained using Dorset medium

Positive samples were approved and marked after viewing in motion live parasite tested during 3 consecutive days (72 hours). The numbers of 8 positive samples were approved clearly. Figure 3 illustrates Distribution of Dorset culture samples at different times depending on the percentage of positive cases.

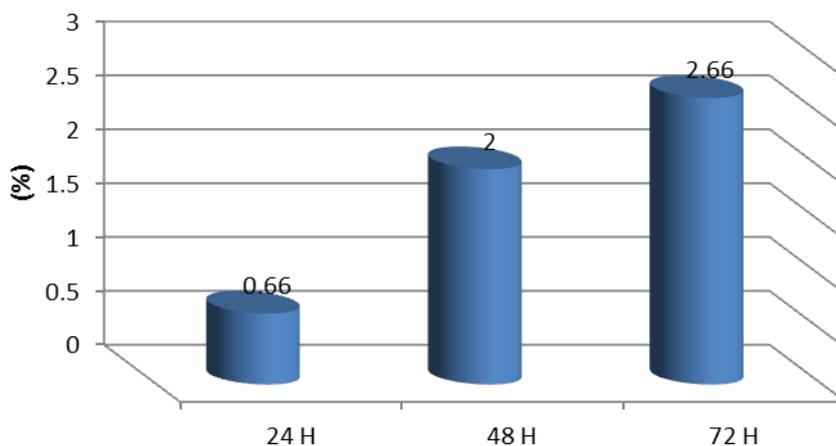


Chart 1: Distribution Dorset culture samples at different times depending on the percentage of positive cases

-The percentage of infection obtained using Diamond's medium

The number of 15 specimens collected from vaginal swab were tested using Diamond culture method (golden standard culture), and 10 samples were positive.

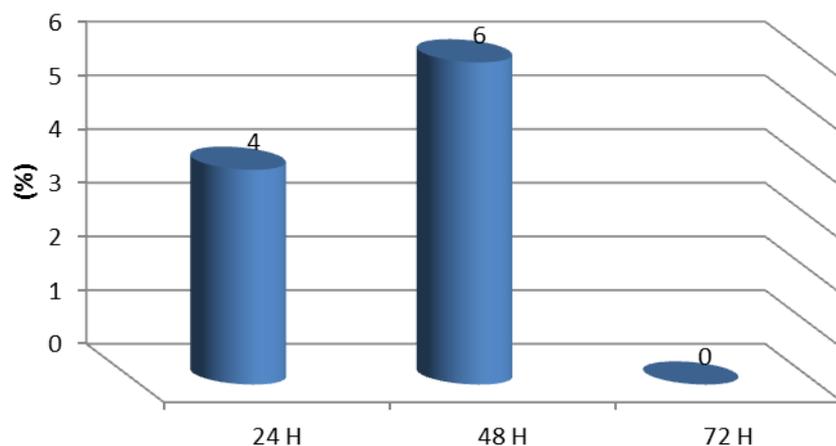


Chart 2: Distribution Diamond culture samples at different times depending on the percentage of positive cases

Table 1: The frequency of Diamond and Dorset culture samples at the end of the experiment

Total	-	+	Diamond culture
4	4	0	+
146	146	0	-
150	150	0	Total

According to this table, the number of positive cases in both Diamond and Dorset culture is 8 while the number of positive cases by Dorset culture method but negative by Diamond culture is zero. The chi-square (χ^2) for this table is 118.31, and the p-value is equal to zero, so, the significance level is less than 0.01, therefore, we conclude that there is a significant correlation between Diamond and Dorset cultures that the two are interrelated.

Results of the study regarding the ages of the patients with trichomoniasis disease show that 150 female patients who were examined are aged from 20 to 65 years.

Notably, 10 subjects out of the 14 positive samples obtained in this study are aged from 20 to 35 years; 3 are aged from 35 and 50 and 1 is aged from 50 to 65 years in menopausal age.

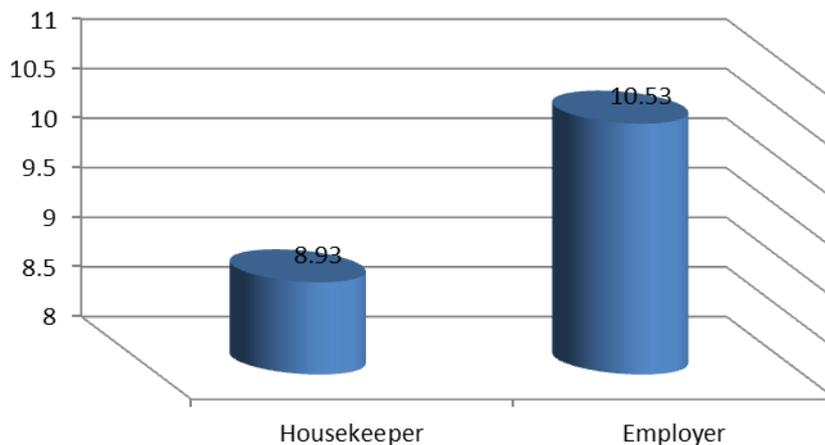


Chart 3: Distribution the sample in terms of jobs and the presence of *Trichomonas vaginalis*

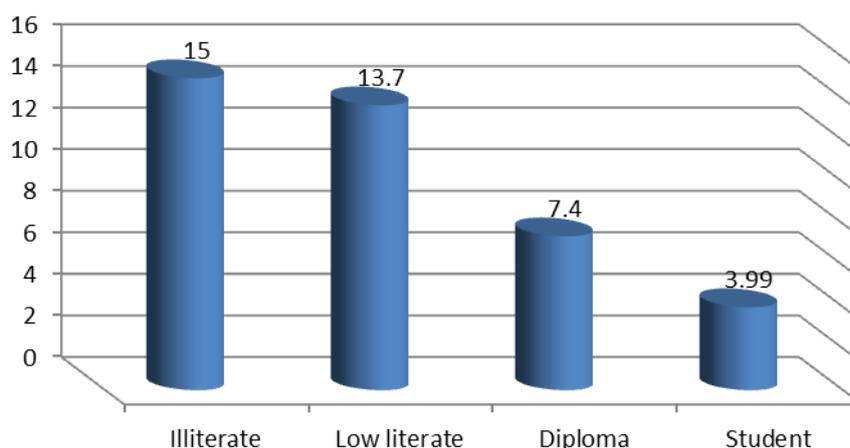


Chart 4: Describe the frequency distribution of the sample in terms of education and the presence of *Trichomonas vaginalis*

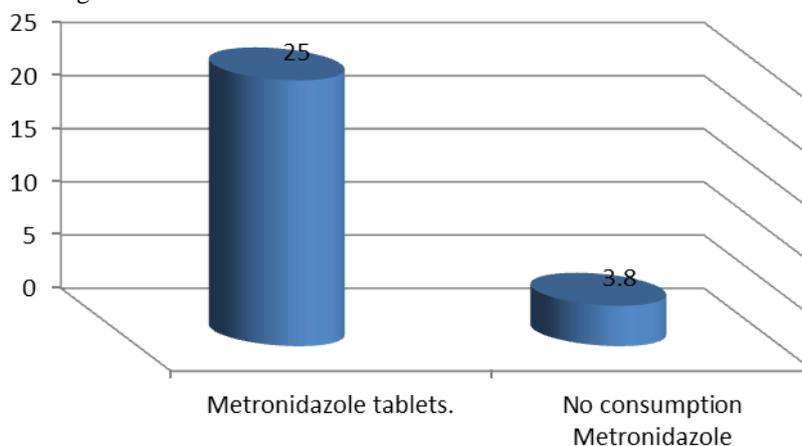


Chart 5: Describe the frequency distribution of the sample in terms of antibiotic use and the presence of *Trichomonas vaginalis*

RESULTS AND DISCUSSION

Trichomonas vaginalis was first isolated from a woman vaginal secretion 1836, In 1868, Charles Rubin proved the existence of the parasites in the vaginal secretions of women, and in 1870 Housman found the parasites in 32% of aged women vagina as well as 40 percent of young women. Then in 1883, someone called Kunestler described the first case of urinary tract infection in men due to the presence of the parasite (5).

It is most commonly spread through sexual intercourse and its propagation through prostitution and multiple sexual partners; therefore, its prevalence in different parts of the world is directly dependent on how the sexual behavior is.

Trichomoniasis is more prevalent among women with STDs, therefore it is important to search for conditions such as HIV, chlamydia, neisseria gonorrhoeae, and Trichomoniasis among those infected with *Trichomonas vaginalis*. *Trichomonas vaginalis* although sensitive to dryness and direct light but can survive in a moist environment or in the urine for 24 hours. It is rare for a woman to heal naturally from the trichomoniasis infection disease without medical aid, but apparently in men the infection resolves after three weeks, which is probably due to prostatic anti-trichomonas secretions containing zinc (ZINC) and the anatomical position of the male genitalia that is improper for the establishment of infection.

Maximum prevalence of trichomoniasis is between 16 to 35 ages, which is the highest sexual activity period. In a study of 769 female subjects (105 single and 664 married) vagina secretions over 2 years, the total 25.7 % of individuals did not have any clinical symptoms of *Trichomonas vaginalis* infection.

In this study of 150 female subjects, 14 cases were positive and according to Dorset culture method 8 cases (5.33%) were positive and Diamond culture method reported 10 positive cases (6.67%). In this study conducted to examine Diamond and Dorset cultures, the chi-square (X²) is 118.31, and the p-value is equal to zero, so, there is a significance relationship. However, at the 24 hours and 48 hours times, there is a significance relationship and correlation according to the P value and chi-square between the two cultures.

REFERENCES

- [1] Ismail Sabeen, 1362. parasitic diseases in Iran in the World Press Day, Volume I, Second Edition.
- [2] Plasyd, A., 1344. Tricot review *Mvnas vaginalis*, PhD Thesis, Tehran: Faculty of Health, Tehran University.
- [3] Tamara, M., Jamil Moghanloo, 1344. Trykvnmvmyazys and its symptoms, Ph.D. thesis, Pharmacy, Tehran: Faculty of Health, Tehran University.
- [4] Hassan Bashir Bad, 1367. human pathogenic parasites - the key to diagnosis and treatment table, tips plus native and tropical parasitic diseases, Tehran University Press
- [5] Dibaji, S.R., Tricot *Mvnyazys* laboratory detection methods and prevalence in the Central Penitentiary Tehran, MSc thesis, pp: 70-1369 (c)
- [6] Dymrchly - the world - the trustees - E. 1378. Of pregnant and non- pregnant women infected with trichomoniasis in two health centers in Qazvin city *Kowsar Medical Journal*, AS, AS pp: 251-247.
- [7] Dybacy, R., 1368. methods of laboratory diagnosis of trichomoniasis and its prevalence in the Central Penitentiary Tehran, MS Thesis, Tehran University of Medical Sciences, Tehran.
- [8] Shahbani Zahiri Qurban Ali, of trichomoniasis and its relation to fungal and bacterial cytology and microbiology laboratories in women referred to health centers of the city. MS Thesis, Tehran University of Medical Sciences, Tehran, pp: 66-1367.
- [9] Sabeen, Ismail, in parasitic diseases, diseases of one or recognized.
- [10] Zia'i thousand Jrmyby, Hagar, of trichomoniasis in women patients admitted to hospitals in the city of Sari and direct comparison of culture and staining in the laboratory diagnosis, MSc thesis 73-1373.
- [11] GH (Drbysan, M. Rezaeian, M. Ghorbani, Hossein Keshavarz
- [12] Myd Farid Hossain, Tahmasp, Mehdi Mahdavi, 1375. check (Trico *Mvnas vaginalis* infection in patients in gynecology and Midwifery, Isfahan University of Medical Sciences, *Iran's Health*, 7: 11.
- [13] Mohebbali, 1386. to protozoology Medicine, Medical University Publications, First Edition.
- [14] Mtkf, M., 1356. and Urogenital trichomoniasis patients examined in the Obstetrics and Gynecology Department, Ferdowsi University of Mashhad, ending a 20 -year medical school in, pp: 89-84.
- [15] Wind, E., duty to investigate the prevalence of *Trichomonas vaginalis* by wet preparation method and the Dorset culture, Parasitology PhD thesis in 1241, the health center city of Khorramabad.
- [16] Dr. Mohammed Rabbani, 1389. PCR molecular techniques in gynecologic vaginalis infection *Mvnas Trico Beheshti* hospital.
- [17] Alderte, j.f., M.W. Avroyor Lhker, 2006. identification of fibronectin Receptor for bacterial receptor for bacterial cytoadherence. *Methods Enzymol*, 236: 318-333.

- [18] Arroyo, R., A. Gonzalez – Robles, A. Martinez – palomo, j.f. A lderete, 1993. signaling of *Trichomonas Vaginalis* for amoeboid Transformation and adhesion sythesis follows cytoadherence. *Mol microbial*, pp: 299 -309.
- [19] Braunwals, E., A.S. Fauci, D.L. Kasper, 2001. *Harrisons principles of internal Medicine* 15 ed . New York : Mc Graw Hill.
- [20] Behrman, Kligmah, Jenson. *Textbook of Nelson*. 17 Edition International edition.
- [21] Brugerolla, G., 1975. Etude de al creptopleuromitose et de la Morphogenesese division chez *Trichomonas Vaginlis* et chez pleusiers qenres de Trechomonadines primitives. *Protistology*, 11: 457-468.
- [22] Bozsech, V. et al., 2007. Trichomonal infections in promiscuous Women *Angew – parasitol.*, 23(2): 65-9.
- [23] Beard cm, Noller kl, o fallon w.m, Kurland lt, M.B. Dockerty, 2003. Lack of evidence for cancer due to use of metronidazole. *N Engl j med.*, 301: 519-523.
- [24] Braun, A., E. Wald, 2000. *Harrisons. peinicpal and internal medicine*. New York mc Graw -hill.
- [25] Bowden, F., P. Garhe, 2000. *Trichomonas vaginalis* epidemiology: Parameterising and analysing a model of Treatment interventions. *sex Transm infect*, 76: 248-256.
- [26] Chhpujani, R.L.j., R. Bhatia, *medical parazitology jaypee brathers medical puplisher*.
- [27] Cappuccinelli, p., C. Sellitto, D. Zicconi, C. Juliano, 1987. Structural and molecular rganization of *trichomonas vaginalis* cytoskeleton. *Acta univ carol boil.*, 30: 211-217.
- [28] Casar, C., L. Julou, 1995. Activity of 1 – (2 – h) hy droxyethyl) 1 – 5 Nitromidazole (8823 RP) against experimental *Trichomonas Vaginalis* infection . *Anninst Pasteur*, 96 : 238-241.
- [29] Crucitti, T., E. Van Dyck, A. Tehe, A. bdellatis B. Vuylsteke, A. Buve, M. Laga, 2003. comparison of culture and different PCR assays for detection of *trichomonas Vaginalis* in self-collected Vaginal swab specimens. *sex Transm infect.*, 79: 393-398.
- [30] Daws *Advances in Parasitology* . 1998 Acudemic press.
- [31] Fari, A., R. Trevoux, V. verges, 1985. Abstracts of the intrtnational Symposiam Trichomonads and thrichomonisis. Diagnosis and sighificance of non-motile forms *Trichomonas vaginalis* abstr 28.
- [32] Fugere, P., G. verschelden, M. Caron, 1983. Single oral dose of ornidazole in woman whit vaginal Trichomoniasis. *obstet Gynecol.*, 620: 502-505.
- [33] Garald, Ls., m.s., F(AAm). *Dignostic medical Parasitology*. Fourth Edition .Asm Press, Washongton
- [34] Garald, L., 1990. *mandell Third edition infection diseases*.
- [35] Garber, W.A. et al., 1986. *trichomonas vaginalis* in the prostate Gland *Arch. Pathol. Lab.Mad*) 110(5) 430-2.
- [36] Draper, D., R. Parker, E. Patterson, W. Jones et al., 1993. detection of *trichomonas vaginalis* in pregnant women with the Inpouch TV culture system .*J Clin Microbiol*, 31: 1016-18.
- [37] Honigbery Bm, King Vm, 1964. struacture of *Trichomonas Vaginalis* j *parasitol*, 50: 345-364.
- [38] Gelbart, S.M., J.L. Thomason, P.J. Osypowski, J.A. james, et al., 1989. comparison of diamonds medium modified and kupferberg medium for detection of tirchomonas vaginalis.*J Clin Microbiol*, 27: 1095-6.
- [39] Honigberg, B.m., G. Brugerolle Structre, 1990. 0 in Honigberg B M . editor *Trichomonas parasitic in humans*. New York, N . Y : Sprihyer – Verlay 5-350.
- [40] Hecko, p et al., 2005. occurrence of Trichomoniasis in woman with in tra utine devices zentrab – *Gynkol.*, 102(19): 112-4.
- [41] Herman, A et al., 2007. prevalence of low genital Tract infections in Young Israeli women . *Isr . J. med sci.*, 21(4) 346-50.
- [42] Hongber. G.M., 1984. pathogenicity of T . *vaginlis* *obstet. Gynecal* pp: 6412.
- [43] Howard W john/es Novaks *Text book of Gynecology*
- [44] Hager, W.D., S.T. Brown, j. Kraus, G.S. kleris, G.j. perkins, M. Henderson, 1980. Metronidazol for vaginal Trichomoniasis: seven – day vs .Single . dose regimen *jama*, 244: 1219 -1220.
- [45] Jareki, Black, J.C. et al., 2003. preliminariy charec Terization of a sperem motility inhibitin factor *Ann. Clin Lab . SCI.*, 18(6): 484- 9.
- [46] Bickley, ls., K.K. Krisher, A.J.R. Punsalang, M.A. Trupri et al., 1989. comparison of direct fluorescent antibody, acridine orange, wet mount and culture for detection of *trichomonas vaginalis* in women attending a public sexually transmitted diseases clinic.*sex transm Dis*, 16: 127-31.
- [47] Levi, M.H., J. Torres, C. pina, R.S. Klein, 1997. Comparson of the Inpouch TV culture system and diamonds modified medium for detection of *trichomonas vaginalis*.*J Clin Microbiol*, 35: 3308-10.
- [48] Kreier, J.P., J.R. Baker, 1987. *Parasitic protozoa* . Boston .Allen and unwin
- [49] Klouman, E., E.j. Masenga, k.i. Klepp, N.E. Sam, C. Nkya, 1977. HIV And reproductive Tract infection in a total village Population in raral kilimangaro Tahznia : Women at increased risk. *Acquir Immun Defic syndr Hum Retrovrrol.*, 14: 163-168.
- [50] Mulle, M., 1987. Hederogenosomes of *trichomonas flagellates* *Acta . Univ carol Biol.*, 30: 249-260.
- [51] Konje, J.C. et al., 2006. The prevalence of Gardnerella vaginalis *Trichomonas vaginalis* and *candida albicans* in the cytology at 1 Badan – Nigerea *Afr . j .med. sci.*, 20(1): 29-34.

- [52] Kulda, j., Tachezy, A. Cerkaso Vova., 2007. In induced anaerobic Resistance To metronidazol in Trichomonas vaginalis. J Eukaryot microbial.
- [53] London: Cv mosby co, 2002. p . 2480 Martins .Burkets oral medicine Diagnosis and Treatment 10th ed .philadelphia : Bc Becer co , 2003 pp: 563.
- [54] Little, j.w., D.A. Falace, Mjler cs Rhodos NI . Dental management of the Medically compromised patient . 6th ed.
- [55] Riley, D.E., M.C. Roberts, T. Takayama, J.N. Keriger, 1992. development of a polymerase chain reaction-based diagnosis of trichomonas vaginalis. J Clin Microbiol, 30: 465-72.
- [56] Land, k., j. Delgadillo–correa, S. Tachezy, 2004. Targeted gene replacement Of a ferredoxin gene in Trichomonas vaginalis does not lead to Metronidazole resistance . mol microbial, 51: 115-122.
- [57] Landers, D.V., 2004. predicting value of the clinical diagnosis of lower genital tract infection . J Clin Microbiol, 190: 1004-100.
- [58] Moore, P.A., 2001. Guggenheimer J, Etzel KR . Type 1 diabetes mellitus Xerostomia and various rates J Endod, 92(3): 281-910.
- [59] McLaren, Lc et al., 2005. Isolation of Trichomonas vaginalis from the Respiratory tract of infant with respiratory diseases. Pediatrics., 71(6): 888-90.
- [60] Muller, M., R.G. Lind Mark, 1976. Uptake of metronidazole and effect on Viability in Trichomonads and Entamoeba invadens under anaerobic and Aerobic conditions . Antimicrob Agents chemother, 9: 697-700.
- [61] Ovcinnkov, N.M., V. Delektorski, E.N. Turanova, G.N. Yashkova, 1975. Further studies of trichomonas vaginalis with transmission and scanning Electron microscopy. Br J Vener Dis., 51: 357-375.
- [62] Petrin, D., K. Delyaty, T.R. Bhat, Garber, 1998. clinical and microbiology Aspects of Trichomonas vaginalis . Clin microbial Rev., 11: 3000317
- [63] Paul Chestev Beaver 9th 2004 clinical parasitology .
- [64] Poria – Ve et al., 2007. study of candida and Trichomonas vaginalis In Leucorrhoea J . Indian .med . Assoc 87 (8): 184-5
- [65] Pertin, D, 1998. clinical and microbiological aspects trichomonas vaginalis. Clinical microbiology review, 11: 300-317.
- [66] Robert Gold Smith, 2003. Tropical medical and parasitology
- [67] Robert, C., M.D. Noble, Third ed, 2005. sexually Transmitted Diseases.
- [68] Skyler, J.S., 2001. Microvascular complication metab clin North Am, 30(4): 833-56.
- [69] San, T., Parasitic Disorders, pathology, Diagnosis, and management. Second Edition
- [70] Szreter, H., j. Kassner, Michalczak, 1987. phagocytosis of streptococcus faecalis by Trichomonas vaginalis. Electron microscopy studies . wiad Parazytol, 33: 643-647.
- [71] Streter, H., 1974. Phagocytosis of Neisseria gonorrhoeae by Trichomonas vaginalis (preliminary report). TWIAD PARAZYTOL 2005 21-532.
- [72] Suriyanon, Vetal, 1998. Trichomonas vaginalis in a perinephric abscess a Case report AM . j .Med. Hyp. 24(5): 776-8.
- [73] Smiths General urology
- [74] Scott, J.R., R.S. Gibs, By. Karlan, A.F. Haney, 2003. Danforth's, Obstetrics And Gynecology Ninth Edition
- [75] Sucharit, p., A. Uthaischant, Chintanat, W. Suphad Tahapohys, p. Eamsobhana, p. Prasomsitti, 2005. in Vivo Studies of Tinidazole in Trichomonas vaginalis infection. SE Asian J Trop med public Health, 100: 556- 561.
- [76] Solano – Gonzalez, E Burrola - Barraced E, Leon -Sicarb C., Avila – Gonzalez Berez – Escobedo LG., Ortega - Lopezaj, R. Arroyo, 2007. The Trichomonad cysteine proteinase TVC peptide Transcript contains an iron – responsive element . FEBS Letters, 81: 2919-2928.
- [77] Suchwobke, J.R., D. Burgess Trichomoniasis, R.v. clin microbial, 2004. 17: 794-803.
- [78] Swygard, H., A. Sena, M. Hobbs, 2004. Choenms Trichomoniasis : Clinical Manifestations, diagnosis and management . Sextransm infect, pp: 80-95.
- [79] Schmid, G., D. Narcuisi, E. Mosar, E. Secor. 2001. Prevalence of metronidazole resistant Trichomonas vaginalis in a gynecology clinic J Reprod med, 46: 545.
- [80] Spence, Mr., D.H. Hollander, j. Smith et al., 1980. The clinical and laboratory diagnosis of trichomonas vaginalis infection . sex Transm Dis., 7: 168.
- [81] Thomason, J., 1999. 1. Trichomonas vaginalis. obstet Gynecol., 7433(536-540).
- [82] Warren, Mahmoud second. 2006 Tropical ... Geographical medicine.