ABSTRACT:
One hundred thirty patients with genital tract infections; 100 female patients (50 vaginal and 50 cervical swabs) with urethritis and cervicitis and (30) male patients complaining from urethritis. These patients were attending to private clinic of obstetric and gynecology clinic and urology clinic. High vaginal, cervical and urethral swabs were obtained from female patients and urethral swabs were obtained from male patients. Bacteriological, direct and indirect investigations were done for each specimen. The present study aimed to detect the rate of Gram positive bacteria in genital tract infections in both sexes. It was found that Gram positive bacteria are involved in the genital tract infections. Staphylococcus aureus was the first rate of isolation (60%) at age 21-40 years old, while the rate of Streptococcus faecalis was 33.3% followed by Streptococcus agalactiae (23.3%) and Staphy. saprophyticus (13.3%) from male patients. Bacteria isolated from the genital tract of females were Staphylococcus aureus (60%), Streptococcus agalactiae (45%), and Staphylococcus saprophyticus (25%). The incidence of infection in both sex was common at age 21-40 years. Diabetic patients were more susceptible to bacteria than non-diabetic ones. We can conclude from the present study that Gram positive bacteria were involved in male and female genital infections. Cystitis or bladder infection was the most common urinary tract infection. It occurs in the lower urinary tract (the bladder and urethra) and nearly common in women. In most cases, the infection is brief and acute and only the surface of the bladder is infected.

KEY WORDS:
Urethral discharge, Vaginal discharge, Bacterial infection.

INTRODUCTION:
Urinary tract infection (UTI) is a bacterial infection that affects any part of the urinary tract. Symptoms include frequent feeling and/or need to urinate, pain during urination, and cloudy urine (Nicolle, 2008). Although urine contains a variety of fluids, salts, and waste products, it does not usually have bacteria (Nicolle, 2001), but when bacteria get into the bladder or kidney and multiply in the urine, they may cause UTI. The most common type of UTI is acute cystitis often referred to as a bladder infection. An infection of the upper urinary tract or kidney is known as pyelonephritis, and is potentially more serious. Although they cause discomfort, urinary tract infections can usually be easily treated with a short course of antibiotics with no significant difference between the classes of antibiotics commonly used (Zalmanovici et al., 2010).

The most common symptoms of a bladder infection are burning with urination (dysuria), frequency of urination, an urge to urinate, no vaginal discharge, and no significant pain (Gould et al., 2009). An upper urinary tract infection or pyelonephritis may also present with flank (abdominal) pain and fever. Healthy women have an average of 5 days of symptoms (Gould et al., 2009). On clinical grounds alone, urethritis in women is often difficult to distinguish from cystitis or vaginitis. These infections produce a variety of overlapping symptoms, including dysuria, urgency, frequency, hesitancy, dyspareunia, or abnormal and vaginal discharges. Therefore, the physical examination and laboratory tests are crucial in establishing the diagnosis (Lane and Takhar, 2011). Young and sexually active women who visited an STD clinic or similar health care setting and complain of dysuria or other urinary symptoms should be evaluated for urethritis, cystitis, vaginitis and cervicitis, or genital ulcer disease, particularly herpes (Salvatore et al., 2011).

The clinical symptoms may be helpful in suggesting which of these entities is present. Many women with vaginitis or herpes have symptoms of “external” dysuria; that is, burning felt on the labia when the stream of urine is passed. Women with true urethral
infection (urethritis) or urinary bladder infection (cystitis) more often have "internal" dysuria, that is, dysuria felt deeper inside the body (Dielubanza and Schaeffer, 2011). Women with bladder infections will also more likely have symptoms of frequency, urgency, gross hematuria, or a history of previous cystitis. Conversely, the presence of concomitant vaginal discharge and/or odor in a woman with dysuria suggests cervicitis and/or vaginitis. Acute onset of symptoms and short duration of symptoms (<4 days before seeking treatment) also favor a diagnosis of cystitis, whereas a history of gradual onset and long duration of symptoms (>7 days) before seeking therapy suggest urethritis or vaginitis (Rossi et al., 2010). Cystitis and urethritis in men most often occur as a result of either obstruction to the urethra by the prostate or an infection of the prostate spreading to the bladder and urethra. Certain venereal diseases such as gonorrhea can cause urethritis in both sexes. There may be a wide variety of other unidentified causes (Perrotta et al., 2008). The symptoms of both conditions are similar: frequent passing of urine with intense, scalding pain. There may be pain in the lower abdomen and a frequent, urgent, desire to pass urine which, in the event, is only a small amount (Raynor and Carson, 2011). Isolation and identification of the bacteria causing the infection are an important part of the diagnosis, and analysis of a urine sample obtained under sterile conditions is essential. Antibiotics effective against the specific organism identified as the cause of the infection will cure it in most cases. Unfortunately, some people, particularly women, have recurring infections which are resistant to treatment (Guinto et al., 2010).

Therefore, the aim of the present study was to isolation and identification of the Gram positive bacteria in the genital tract of male and female patients.

MATERIAL AND METHODS:

A total of 130 patients with genital tract infections were included in this study. They were divided into 100 females patients, 50 complaining from vaginal discharge and other 50 have urethritis and cervicitis, while 30 male patients complaining from urethritis. The samples were collected from patients attending privat clinic of Obstetric and Gynecology and urology. Through the period from February 2010 to May 2010, vaginal, cervical and urethral swabs were obtained from female patients and urethral swabs were obtained from male ones. Vaginal, cervical, and urethral swabs were taken from female patients using sterile cotton tip applicator (Yousif et al., 1998). Swabs were inoculated on blood agar (Mast) and on chocolate agar (Mast) plates, incubated aerobically at 37°C for 48-72 hours. Chocolate agar was inoculated by the swab and incubated at 37°C for 48-72 hours, and incubated under CO2. The swab was rolled on two clean glass slides, one smear was fixed by heat and stained by Gram’s stain (Ryan and Ray, 2004). To obtain a specimen from the male urethra, cotton tipped swab was inserted 2-4cm, into the urethra and rotated or held in position for few seconds before removed. The first swab rolled on blood agar plates and incubated aerobically and the same swab rolled on chocolate agar plate and incubated under CO2 and incubated at 37°C for 24-48 hours. The specimens smeared on to glass slides, heated, fixed, and can be stained by Gram’s stain (Beveridge, 2001). These slides were examined for the presence of pus cells (Baily and scotti, 2007). The API (IDENT) system was used for the identification of the bacterial isolates.

Identification of Staphylococci species was carried out as Follows:

A- Mannitol salt agar was used to differentiate mannitol ferments from other species of Staphylococci namely Staph. epidermidis.

B- Slide coagulase (clumping factor) test and catalase test were performed according to Jawetz et al. (1980).

C- Coagulate Test: It is a conclusive test that distinguish Staph. aureus (coagulate positive) from another species of Staphylococcus. Briefly the Staphylococcus was emulsified in a drop of saline and mixed with a loopful of undiluted plasma. Rapid clumping of the suspension with coagulate positive strain was observed and bound coagulate (clumping factor) on bacterial cell surface reacts directly (tube agglutination) with fibrinogen (Chelikani et al., 2004).

Catalase by using Loopful or sterile wooden sticks to transfer a small amount of pure growth from the agar onto the surface of a clean, dry glass slide. Immediately a drop of hydrogen peroxide (H2O2) was added on to a portion of a colony on the slide to the evolute gas bubbles indicating a positive test (Aggar et al., 2005).

Streptococci is Gram positive spherical bacteria, catalase negative and normally occur in pairs or chain of varying lengths. Their colonies on blood agar appear as small colonies, Gray white color determine the type of hemolysis produced on blood agar and is very helpful in the identification of Streptococci (Aggar et al., 2005). β-hemolytic Streptococci in general produce soluble hemolysin that can be recognized readily on culture in the area surrounding the colony on blood agar. There are different groups of β-hemolytic Streptococcus e.g. Streptococcus pyogenes (group A), Streptococcus agalactia (group B) ...etc. Streptococcus agalactia (group B) is normal flora of female genital
A total of 130 patients were performed during the study period. The most common isolates in both groups were *Staph. aureus*, *Streptococcus agalactia*, and *Streptococcus fecalis*. *Staphylococcus saprophyticus* bacteria were isolated only from the genital tract infections. Table 1 shows different age groups included in the present study that ranged from 18–59 years old. They were separated into two groups (male and female). The incidence of genital tract infections was higher at age 21–40. Table 2 shows the incidence of microorganisms isolated from genital tract infections. Genital tract of males was infected with 18 of *Staphylococcus aureus* (60%), 10 *Streptococcus fecalis* (33.3%), 7 *Streptococcus agalactia* (23.3%), and 4 *Staph. saprophyticus* (13.3%). Female patients were infected with 60 *Staphylococcus aureus* (60%), 49 *Streptococcus fecalis* (49%), 45 *Streptococcus β-hemolytic group B* (*Streptococcus agalactia*) (45%), and 25 *Staphylococcus saprophyticus* (25%).

**Table 1. The age categories of infected patients**

<table>
<thead>
<tr>
<th>Age</th>
<th>Male</th>
<th>%</th>
<th>Female</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-20</td>
<td>8</td>
<td>26.6</td>
<td>18</td>
<td>18.0</td>
</tr>
<tr>
<td>21-40</td>
<td>22</td>
<td>73.3</td>
<td>78</td>
<td>78.0</td>
</tr>
<tr>
<td>41-49</td>
<td>0</td>
<td>0.0</td>
<td>2</td>
<td>2.0</td>
</tr>
<tr>
<td>50-59</td>
<td>0</td>
<td>0.0</td>
<td>2</td>
<td>2.0</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>99.9</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

**Table 2. The incidence of bacteria isolated from genital tract infection**

<table>
<thead>
<tr>
<th>Bacteria</th>
<th>Male No.</th>
<th>%</th>
<th>Female No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Staph. aureus</em></td>
<td>18</td>
<td>60</td>
<td>60</td>
<td>60.0</td>
</tr>
<tr>
<td><em>Streptococcus fecalis</em></td>
<td>10.0</td>
<td>33.3</td>
<td>49</td>
<td>49</td>
</tr>
<tr>
<td><em>Streptococcus agalactia</em></td>
<td>7.0</td>
<td>23.3</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td><em>Staph. saprophyticus</em></td>
<td>4.0</td>
<td>13.3</td>
<td>25</td>
<td>25</td>
</tr>
</tbody>
</table>

Table 3 & figure 1 show the relationship between the diabetic patients and female genital tract infections. A high incidence of infection in diabetic female patients was recorded at age 21-40 years. Figure 2 shows the relationship between non-diabetic female patients and the incidence of genital tract infection that was recorded also at age 21-40 years. Statistical analysis revealed high significant differences between age groups (P< 0.0001). χ² test revealed high significant differences in genital tract bacterial infection in the order *Staphylococcus aureus* followed by *Streptococcus fecalis*, then, *β-hemolytic streptococcus group B* (*Streptococcus agalactia* and *Staphylococcus saprophyticus* and (P< 0.0001).

**Table 3. incidence of genital tract bacterial infection in diabetic female patients.**

<table>
<thead>
<tr>
<th>Age</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-20</td>
<td>5.0</td>
<td>12.5</td>
</tr>
<tr>
<td>21-40</td>
<td>20.0</td>
<td>50.0</td>
</tr>
<tr>
<td>41-49</td>
<td>9.0</td>
<td>22.5</td>
</tr>
<tr>
<td>50-59</td>
<td>6.0</td>
<td>15.0</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100</td>
</tr>
</tbody>
</table>

**DISCUSSION:**

In this study, we reported that Gram positive bacteria isolated from genital tract infections in female were more than in male patients. The higher incidence in female patients may be due to predisposing factors causing urogenital tract infection (Meunier *et al.*, 1992). Different studies have demonstrated a higher incidence of urogenital tract infection in females (de Aguia *et al.*, 1997). The present results are in agreement with those of Al-Kaisi (1994), Al-Hadithi (2000), and Al-Hashime (2000) who reported...
high incidence of urogenital bacterial infections in diabetic female patients (Patterson and Andriole, 1997). Urogenital tract infection is an important infection and early bacterial diagnosis and treatment of urogenital infection will reduce the life threatening (Kuroda et al., 2005).

In the present study, *Staphylococcus aureus* was the most frequently isolated bacteria in both diabetic and non-diabetic patients and was the most common cause of urogenital tract infection. *Staphylococcus saprophyticus* is a coagulase-negative species of *Staphylococcus* bacteria and it is often implicated in urinary tract infections (Zalmanovici et al., 2010). *Staphylococcus saprophyticus* is resistant to the antibiotic novobiocin, a characteristic that is used in laboratory identification to distinguish it from *Staphylococcus epidermidis*, which is also coagulase-negative but novobiocin-sensitive (Zalmanovici et al., 2010).

The present investigation is in agreement with Akbar (2001) who recorded 32% of patients were diabetic and 68% were non-diabetic and Kuroda et al. (2005) who recorded 10–20% of urinary tract infection caused by *Staphylococcus saprophyticus* at age 17–27 years. *Streptococcus agalactiae* or GBS causes pneumonia and meningitis in neonates and the elderly, with occasional systemic bacteremia (Apgar et al., 2005). They can also colonize the intestines and the female reproductive tract, increasing the risk for premature rupture of membranes and transmission to the infant (RCOG, 2006). Studies on pregnant women between 35 and 37 weeks gestation were tested for GBS. Women who were positive result are given prophylactic antibiotics during labour, which will usually prevent transmission to the infant (Schrag et al., 2002). Our study reported that the most common organism isolated from urogenital tract infection in male and female patients was *Staphylococcus aureus*, also reported a relationship between female genital tract infection and diabetes mellitus. This is probably due to the fact that diabetes mellitus produce a biochemical changes in the vaginal mucosa similar to that produced during pregnancy. Uncontrolled diabetes has been shown by many workers to be commonly associated with urogenital tract infection in male candidiasis (Geerling et al., 1997). The most common infection in both sexes occurred at age 21–40 years. Thus, young men have high incidence of infection that decreased with advanced age. Urinary tract infection (UTI) has long been recognized as a significant problem in patients with diabetes mellitus (DM) that occurs both in males and females of all age groups. The urinary tract consists of the urethra, the bladder, the ureters, the kidneys and in men the prostate gland (Conway et al., 2007). An infection in any of these areas is called a urinary tract infection. Patients with diabetes acquire urinary tract infections (UTIs) very often because hyperglycemia results in increase sugar in the urine and becomes a friendly environment for the bacterial cultures to grow.

Age, poor metabolic control, duration of DM, defects in neutrophil function, frequent hospitalization, and recurrent vaginitis, vascular complications may play a major role in the higher incidence of UTI in diabetic patients (Peterson et al., 2008). The study conducted by M.V. Hospital for Diabetes and Diabetes Research Centre showed that the prevalence of UTI was high among females compared to males because the female urethra is shorter than the male urethra which allows bacteria to get into the bladder more easily. The severity of urinary tract infections varies from a symptomless to severe life-threatening illness. Milder infections called cystitis tend to be restricted to the bladder which can be aggravated if the bladder does not empty completely, while more severe infections tend to spread to the kidney(s) called as Pyelonephritis. UTI in diabetic patients is not only more severe but also is more recurrent when compared to non-diabetic patients (Roussey-Kesler et al., 2008). *Staphylococcus aureus* has an important role in vaginitis by causing different symptoms purulent discharge (blood may be present) with bad (fishy) odor, pain during intercourse or urinating, and vaginal itch (Menichetti, 2005). Various *Staphylococci* species and other bacteria may cause infection of urinary system in a male and the common symptoms are: burning pain during urination, urinary frequency and urgency and the symptoms of bacterial prostatitis as pain in the groin, testicles, penis or lower abdomen cloudy urine, rarely blood in the semen, fever and muscular pain (Chambers, 2001).

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الأبكتيريا إيجابية الجرام المعزولة من التهابات المسالك التناسلية

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أجريت الدراسة الحالية على 130 من المرضى الذين يعانون من التهابات الجهاز التناسلي ويتوردون على العيادات الخاصة بالأمراض التناسلية والتوليد وكذلك عيادات الأمراض البولية. تم فحص 100 من الإناث اللائي يعانون من التهاب الأحليل وعند الرحم: 50 مريضة تعاني من السوائل المخللية و 50 مريضة تعاني من افرات عنق الرحم و 30 من المرضى الذكور الذين يعانون من التهاب الأحليل. تم الحصول على وسائط مخللية عادية وعند الرحم وعند البطول من المرضى النساء ومصبات احليلية من المرضى الذكور. أجريت الدراسة الميكروبولوجية من خلال الفحص المباشر والغير المباشر لإظهار نسبة البكتيريا إيجابية الجرام في التهابات المسالك التناسلية في كلا الجنسين. تبين الدراسة أن البكتيريا إيجابية الجرام في التهابات المسالك التناسلية كانت المكورات العنقودية الذهبية المرتبة الأولى من العزل بنسبة 60% في سن 21-40 سنة، فيما بلغت نسبة Streptococcus: 33.3% Streptococcus agalactia، بلعูب الفقارية القاطعة Staphylococcus feacials، ونسبة Staphylococcus aureus 49%، Staphylococcus Saprophticus بنسبة 13.3%، والإناث نسب الفزلات كانت كالتالي 60%: Streptococcus feacials %49، Staphylococcus aureus Staphy... و 25% Streptococcus agalactia %45

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