WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 10, Issue 11, 234-244. Review Article ISSN 2277– 7105

A REVIEW ON GARBHINI MUTRAKRICHRA W.S.R. TO URINARY TRACT INFECTION

Dr. Khushbu Kaushik[1*] and Dr. Geeta Patil[2]

[1]PG Scholar Dept. of Prasuti Tantra & Stree Roga, Shri Dhanwantari Ayurveda Medical College and Research center, Mathura.

[2]Professor, Dept. of Prasuti Tantra & Stree Roga, Shri Dhanwantari Ayurveda Medical College and Research Center, Mathura.

Article Received on
28 June 2021,

Revised on 18 July 2021,
Accepted on 08 Aug. 2021

DOI: 10.20959/wjpr202111-21328

***Corresponding Author**
Dr. Khushbu Kaushik
PG Scholar Dept. of Prasuti Tantra & Stree Roga, Shri Dhanwantari Ayurveda Medical College and Research center, Mathura.

ABSTRACT

Mutrakrichra can be correlated to Urinary tract infection it is usually caused by Escherichia coli bacteria. Incidence of UTI is comparatively more in women than men, 40% to 50% of whom will suffer at least one clinical episode during their lifetime. Progressive anatomical and physiological changes during pregnancy are not only confined to the genital organs however within other systems of the body too, some may be felt as discomfort by a pregnant woman.

KEYWORDS: Mutrakrichra, Escherichia coli, anatomical, pregnancy.

INTRODUCTION

UTI is very Common in pregnancy. It is the 2nd most common type of infection in body. It is seen mostly in young sexually active women. UTI is more common in pregnancy between 6th week (start) and 22-24th week (peak), due to the effect of hormones and urethral changes.

The symptoms of urinary tract infections are nearer to those of Mutrakrichra. Among the Garbhini Vyadhis Mutrasanga and Mutragraha have been mentioned. In the routine antenatal checkups, the sign and symptoms of Mutrakrichra are generally present, so Mutrakrichra has been tried to study w.s.r. to urinary tract infection following the principle given by Acharya Charaka that nature of the disease should be comprehended through dosha, the site of manifestation, aetiological factors and then initiation of treatment.

UTI is an infection involving any of the organs or structures of the urinary tract, including kidneys, ureters, bladder, and urethra. Infections of the urinary tract occur frequently during gestation. In most cases the ascending bacterial infection affects only the lower urinary tract (Asymptomatic bacteriuria, acute cystitis) but during pregnancy as many as 25-40% of these lower infections ascend to the upper tract and cause acute pyelonephritis. Acute cystitis is usually severely symptomatic and most patients with this type of lower urinary tract infection are recognized and adequately treated. The problem lies in the patient who has asymptomatic bacteriuria, which needs to be recognized and treated to prevent upper tract disease.

A series of changes happen in the physiological and psychological status of women. UTI occur due to the colonization of organisms in the urinary tract, when body defense mechanisms are decreased. On the contrary Ayurveda gives importance to Vyadhi Kshamatva mainly. During Garbhavastha, the Bala of woman is lowered due to altered physiological status.

A pregnant woman who develops UTI should be treated promptly to avoid pyelonephritis, premature delivery of her baby and other risks such as placental retardation, PROM, IUGR etc.

Review on Mutrakrichra

Vyutpatti of Mutrakrichra

The term Mutrakrichra is made up of two words i.e. "Mutra" and "Krichra"

Nirukti of Mutrakrichra[1]

The disease in which urine is passed with difficulty is called Mutrakrichra.

Nidana[2]

Over indulgence in physical exercise, consuming heat producing medicines, drinks, fast riding on animals (or other vehicles) for long time, eating flesh of animals (or birds) of marshy places, eating food too frequently and indigestion these and other causes make for increase of one or all the doshas together, which in turn get localized in the urinary bladder and urinary tract producing difficulty in micturition.

Samprapti

By the above causes **vatadi dosha** get vitiated separately or in combined state, enter the basti and cause **mutramarga sankocha & kshaya** then the patient gets difficulty while passing

urine. This conition is known as mutrakrichra.[3]

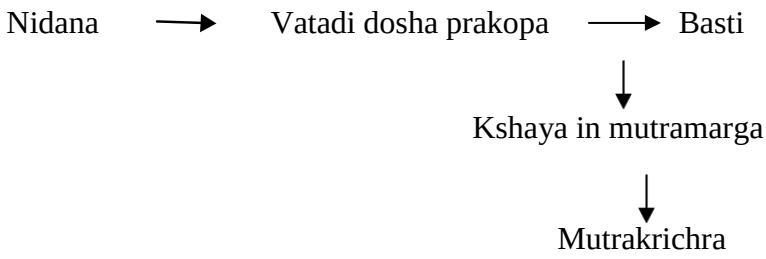

Figure no: 1: Schematic presentation of Samprapti.

Samprapti Ghatak

Dosha: Tridosha with Dominant Vata (Su.), Pitta (Ka.).

Dushya: Rasa, Rakta.

Adhishthana: Mutrashaya.

Srotasa: Mutravahasrotas, Rasavahasrotas.

Srotodushti Prakara: Sanga, Vimargagamana.

Rogamarga: Madhyama.

Agni: Agnimandya.

Vyadhi Prakara: Nija, Agantuja

Pratyatma Lakshana: Kricchrata in Mutrapravritti

Various Classifications of Mutrakrichra

All the Acharyas except Acharya Vagbhatta, have described eight types of Mutrakrichra. Doshaja Mutrakrichra has been described by all the Acharyas and there is difference of opinion in nomenclature of other Mutrakrichra which is shown in the following table.

Table No. 1: Type of Mutrakrichra.

Type of Mutrakrichra	C.S[4]	S.S[5]	K.S[6]	Vagbhatta[7]	Ma.Ni & Bh.Pr	Sh. S.
Vataja	+	+	+	+	+	+
Pittaja	+	+	+	+	+	+
Kaphaja	+	+	+	+	+	+
Sannipataja	+	+	+	+	+	+
Dwandaja (3 types)	-	-	+	-	-	-
Ashmarijanya	+	+	-	-	+	+
Sharkarajanya	+	+	-	-	+	+
Purishaja	-	+	-	-	+	+
Shukraja	-	-	-	-	+	+
Raktaja	+	-	+	-	-	-
Abhighataja (Shalayaja)	-	+	-	-	+	+

LAKSHANA

A) Samanya Lakshana - Often frequent micturition with difficulty.

B) Vishesh Lakshana -

1) **Vata**:- When dysuria is due to 'Vata' there is severe discomfort and pain in the urethra and the patient passes urine in small quantities again and again.
2) **Pitta**:- In dysuria due to 'Pitta' the patient passes yellow urine with blood again and again with difficulty, pain and burning sensation.
3) **Kapha:-** In dysuria due to 'Kapha' there is swelling and heaviness in the urethra and the urine is slimy.
4) **Sannipataj**:- Shows clinical features of all the 3 doshas. It is most difficult to cure.
5) **Ashmari Samprapti**:- Sukra enters the mutrashaya with mutra or pitta or kapha along with mutra. Mutra gets dried by vayu similar to gorochan formed in gopitta. Similarly ashmari is formed in basti.
6) **Sharkara**:- If hard ashmari obstructs the mutramarga, and the patient voids forcefully then it causes injury to the mutramarga, resulting in haematuria. If it comes out then the patient can void urine clearly. Due to vayu the ashmari is destroyed into small pieces, which when come out of mutramarga is known as sharkara.
7) **Sukraj**:- Vata, pitta, kapha, which have reached mutrashaya will reduce the pravrutti of sukra. When sukra stops coming out pain starts in the linga (penis) and basti (bladder). Mutrenidraya becomes stiff. Shopha and pain are present. In basti and vrushana pricking pain starts.
8) **Raktaj Mutrakrichra**: - Due to kshata, abhighat or due to ativyavava, sukra kshaya, the prakupita rakta in basti causes severe pain and along with mutra ashmari comes out. If blood collects more in the basti, adhmana and heaviness are present. If blood comes out, lightness of basti occurs.
9) **Abhighataja:-** If urinary channels are traumatised and injured by some foreign body, dysuria arises with severe pain. It has features like those of vatabasti.
10) **Shakrit:-** By suppression of faeces, vayu gets aggravated and causes flatulence, colic and retention of urine.

Calculus and gravel are similar in origin and symptoms. Disintegrated particles of kapha, having been transformed by pitta and torn by vayu, are known as sarkara (gravel). They produce cardiac pain, shaking, colic, excessive diminution of digestive fire, fainting and severe dysuria. When gravel flows out with urine, pain subsides until some other gravel

obstructs the opening of the passage. This is the feature of dysuria caused by gravel.[14]

Modern review

Some diseases of kidney and urinary tract may be associated with pregnancy. Changes in pregnancy often predisposes to the development of urinary tract disorders, an example being acute pyelonephritis. In other cases, pregnancy may predispose the worsening of renal disorder and its sequelae, as with lupus nephritis complicated by hypertension.

Increased vesicoureteral reflux is another important consequence of these normal pregnancy associated changes.

Evidence of renal function hypertrophy is apparent very soon after conception. Pregnancy – induced increase vasodilation increases effective renal plasma flow and glomerular filtration by 40 and 65 percent, respectively.

Urinary tract infections

Urinary tract infections are the most common bacterial infections encountered during pregnancy. Although asymptomatic bacteriuria is more common. Symptomatic infection may involve the lower tract to cause cystitis or it may involve the renal calyces, pelvis and parenchyma to cause pyelonephritis.

PATHOGENESIS

1) Causative organisms

The principal causative organisms are the enteric gram-negative rods. E. coli are by far the most common one. Other important organisms are species of proteus, klebsiella, enterobacter and pseudomonas. These are usually associated with recurrent infections, especially in patients who undergo urinary tract manipulations. Staphylococci and streptococcus bacilus may also cause pyelonephritis but it is uncommon.

2) Infection period

There are two routes by which bacteria can reach the kidneys through the blood stream (hematogenous) and from the lower urinary tract ascending infection, although hematogenous spread is far less common of the two. Acute pyelonephiritis may result from seeding of the kidneys by bacteria in the course of septicemia or infective endocarditis. Ascending infection from lower urinary tract is the most important route by which the bacteria reach the kidney.

The 1st step in the pathogenesis of ascending infection appears to be colonization of the distal urethra (and the introitus in females) by gram-negative coliform bacteria. From here the organisms may gain access to the bladder, moving against the flow of urine. This may occur during urethral instrumentation including catheterization and cystoscopy which are important predisposing factors in the pathogenesis of UTIs.

Pathophysiological description of urinary tract symptoms

1. Polyuria

An inappropriately high urine volume (>3 litres/day) may result from increased urinary solute excretion or may represent pure water dieresis. In assessment of polyuria accurate documentation of intake is essential. In primary or psychogenic polydipsia, the increased urine output is an appropriate response to increased water intake. Typically, plasma sodium concentration will be low to normal in such patients. Polyuria with increased free water clearance in the absence of an excessive intake is indicative of impaired urinary concentrating ability, as seen in diabetes insipidus.

2. Frequency

Frequency describes micturition more often than a patient's expectation. It is one of the most common urologic symptoms. The normal adult void five or six times per day with a volume of approximately 300 ml with each. It may be consequence of polyuria.

Etiology

There are two primary causes of urinary frequency.

(1) Decreased bladder capacity with resultant decrease in the volume of urine per voiding.

(2) Increased urine volume (polyuria) with resultant normal volume of urine per voiding.

Diagnosis of decreased bladder capacity with decreased volume per voiding.

3. Urgency

It is the strong, sudden impulse to void. As with pain on urination, the usual cause is an inflammatory lesion of the lower urinary tract. Urinary urgency may also occur because of anxiety with out underlying urologic pathology

4. Dysuria

It is the painful urination that is usually caused by inflammation. This pain is usually not felt over the bladder but is commonly referred to the urethral meatus. Pain occurring at the start

of urination may indicate urethral pathology where as pain occurring at the end of micturition is usually of bladder origin. Dysuria is frequently accompanied by frequency and urgency.

Milder degrees of pain are often described as burning sensation. The usual cause is a non-specific bacterial infection.

5. Oligouria

Volume below 300 ml/day is termed oligouria. A low measured urine volume is an important finding and is a consequence of reduced production, obstruction to urine flow or both.

6. Hesitancy

It refers to delay in start of micturition. Normally urination begins within a second after relaxing the urinary sphincter.

7. Haematuria

Haematuria may be visible and reported by the patient (macroscopic haematuria), or invisible and detected on dipstick testing of urine (microscopic haematuria). It indicates bleeding from anywhere in the renal tract.

Microscopy shows that normal individuals have occasional red blood cells in the urine (up to 12500 rbc/ml). The detection limit for dipstick testing is 15-20 000 rbc/ml, which is sufficiently sensitive to detect all significant bleeding. True positive tests may occur during menstruation, infection or strenuous exercise, but persistent haematuria requires further investigation to exclude malignancy.

Asymptomatic Bacteriuria

Asymptomatic bacteriuria refers to persistent multiplying bacteria with in the urinary tract without symptoms.

Bacteriuria in pregnancy

Complications of pregnancy due to UTI are increased rates of prematurity and fetal mortality. There is also an association with pregnancy complications such as pre- term labour.

The diagnosis of asymptomatic bacteriuria requires the demonstration of “significant number” of bacteria in the urine. In most instances it can be accomplished by culture of midstream specimens of urine without resorting to catheterization. When quantitative

methods of culturing urine are used, a mid stream specimen of urine containing more than 5-10 organisms (100,000 per ml of urine) is usually indicative of infections and even though asymptomatic, it would be advisable to eradicate the infection by treatment.

Acute pyelonephritis is common in pregnancy, infection of the bladder alone- cystitis may also be met.

Cystitis and Urethritis

Cystitis results from bacterial infections of the bladder. It is more often seen prior to the 16th week of pregnancy in women with marked retroversion of the gravid uterus. As a result of such retroversion the cervix may get hitched under the symphysis pubis, occasionally compressing the urethra. The anatomical changes resulting from the displacement give rise to obstruction to the free flow of urine resulting in stasis, infection. At times the obstruction and infection are severe as a result of impaction or incarceration of the gravid uterus with in the pelvis.

The examination of the urine help in the diagnosis. RBC, Pus cells and bacteria are all present in the severe form with characteristics symptoms of dysuria and attacks of retention of urine.

Acute Pyelonephritis

Acute pyelonephritis is the most common serious medical complication of pregnancy, occurring in 1-2 % of pregnant women.

Pyelonephritis is more common after mid-pregnancy. It is unilateral and right sided in most women and bilateral in 1/4th. In most women renal parenchyma infection is caused by bacteria that ascend from the lower tract.

Chronic pyelonephritis

Chronic interstitial nephritis, which is thought to be caused by bacterial infection, is termed chronic pyelonephritis. In many cases, classical radiological scarring is accompanied by ureteral reflux with voiding; thus the term reflux nephropathy. In contrast to acute pyelonephritis, chronic infection is frequently not symptomatic and in advanced cases, symptoms are those of renal insufficiency. Fever than half of women with chronic pyelonephritis have a clear history preceding cysitis, acute pyelonephritis or obstructive disease.

The pathogenesis of the disease therefore is obscure but it is doubtful that it is simply from persistent bacterial infection. Certainly, very few individuals with recurrent clinical episodes of urinary infections develop chronic infections or progressive renal involvement.

Stone disease during pregnancy

Ureteral lithiasis are relatively uncommon complications of pregnancy. Because pregnancy creates some of the cardinal pre-requisites for stone formation – urinary stasis and infection, the incidence might be expected to be higher were it not for the relatively short duration of pregnancy. Pregnant women have fewer symptoms and pass stones more efficiently, presumably because of urinary tract dilation. Stone disease does not appear to have any adverse effects on pregnancy outcome except for an increased frequency of urinary infection.

Although urinary calculi seldom cause severe symptomatic obstruction during pregnancy, persistent pyelonephritis despite adequate antimicrobial therapy should prompt a search for renal obstruction, which most frequently is due to nephrolithiasis.

Acute renal failure

Acute renal failure associated with pregnancy has become less common but it certainly has not been eliminated. The most common obstetrical causes of acute renal failure are abruption of placenta & eclampsia. 1/3 rd of women develops necrosis.

Idiopathic Postpartum Renal failure

It is an acute irreversible renal failure that develops with in the 1st 6 weeks of postpartum. The pathological changes identified by renal biopsy were necrosis and endothelial proliferation in glomeruli, necrosis, thrombosis and intimal thickening of the arterioles. No vascular abnormalities were demonstrated in the other visceral organs.

Morphological changes in the erythrocytes consistent with microangiopathic hemolysis and thrombocytopenia.

Complications of UTI in pregnancy

1) Hypertension.
2) Intrauterine growth retardation.
3) Anaemia.
4) Pre-mature rupture of membrane.

5) Fetal distress.
6) Cesarean delivery.
7) Still birth
8) Neonatal death.
9) Pre-maturity.
10) Worsening of renal disease.

DISCUSSION AND CONCLUSION

There are no direct references available for Garbhini Mutrakricchra in the Ayurvedic classics. It could be because the disease was not very common at that time and probably their lifestyle and Garbhini Paricharya was strictly followed and immunity is also responsible for that. Due to Aharvihar janya hetu and decreased immunity as well as insanitation this disease more hamper in today's era and hence it needed to be given special attention.

Lower urinary tract infection can be symptomatic or asymptomatic. Symptomatic can be further classified as infective and non infective which is diagnosed microbiologically.

It is defined as an inflammatory response of the urothelium to bacterial invasion that is usually associated with bacteriuria and pyuria. Microbiologically, the presence of at least 105 organisms/ml of urine in an asymptomatic patient or >100 organisms/ml of urine in a symptomatic patient with accompanying pyuria (>7 WBC's/ml).

Urinary tract symptoms are very common in pregnancy, so they should be segregated into pregnancy induced changes on the urinary system and underlying urinary tract infection.

In Mutrakricchra, the main site described is Basti and Medhra. In the Lower urinary tract infection, bladder and urethra are involved. Mutrakrichra in pregnancy is quite common but it can be easily prevented by following proper diet and by following appropriate yogic exercises.

REFERENCES

1. Lal Manna. Amarkosha. Varanasi: Chaukhambha Vidhya Bhavan, 1995; 139.
2. Sushruta, Sushruta Samhita, Dalhanacharya's Nibandhasamgraha Sanskrita commentary by Yadavaji Trikamaji, Nidana sthana, Chapter 3/20, Varanasi, Chaukhambha Surbharati Prakashana, 2012; 279.
3. Charaka, Charaka Samhita, Chakrapanidatta's Ayurvedadipika Sanskrita commentary by

Yadavaji Trikamaji, Chikitsa sthana, Chapter 28/28, Varanasi, Chaukhambha Surbharti Prakashana, 2013; 617: 12.

4. Charaka, Charaka Samhita, Chakrapanidatta's Ayurvedadipika Sanskrita commentary by Yadavaji Trikamaji, Chikitsa sthana, Chapter 28/28, Varanasi, Chaukhambha Surbharti Prakashana, 2013; 617: 12.
5. Sushruta, Sushruta Samhita, Hindi commentary by Ambikadatta Shastri, Uttar tantra, Chapter 55/9, Varanasi, Chaukhambha Sanskrita Sansthana, 2011; 516: 13.
6. Sushruta, Sushruta Samhita, Hindi commentary by Ambikadatta Shastri, Nidana sthana, Chapter 3/12, Varanasi, Chaukhambha Surbharti Prakashana, 2010; 313.
7. Madhavkara, Madhava nidana, Vijayrakshita's Madhukosha Sanskrita commentary by Brahmanand Tripathi, Varanasi, Chapter 28/5, Chaukhambha Surbharti Prakashana, 2012; 602.
8. Vagbhat, Ashtanga hridaya, Hindi commentary by Brahmanand Tripathi, Nidana sthana, Chapter 9/39, Varanasi, Chaukhambha Surbharti Prakashana, 2003; 493.