

## Aetiopathogenesis and clinical features of dysmenorrhoea (*Usr-i-tamth*) in traditional Unani medicine and contemporary era: A literary research

Arshiya Sultana<sup>1\*</sup>, Asma Khan<sup>2</sup>, Qhuddsia Quwat Nawaz<sup>3</sup>, Lamatunoor Syed<sup>4</sup>

<sup>1</sup>Dept. of Amraze Niswan wa Ilmul Qabalat (Gynecology and Obstetrics), National Institute of Unani Medicine, Bangalore-Karnataka, India; <sup>2</sup>Dept. of Amraze Niswan wa Ilmul Qabalat, National Institute of Unani Medicine, Bangalore-Karnataka, India; <sup>3</sup>Dept. of Amraze Niswan wa Ilmul Qabalat, Govt. Nizamia Tibbi College, Hyderabad-Telangana; <sup>4</sup>Dept. of Afjal (Pediatrics) YunusFazlaniUnani Medical College, Kunjkheda- Maharashtra, India

### ABSTRACT

Dysmenorrhoea is the most important under diagnosed and undertreated gynaecologic disorder of all menstrual complaints. It affects 50% women of childbearing age and has a major impact on health and societal costs worldwide especially in developing countries. Therefore, a literary exploration of traditional sources for aetiopathogenesis and clinical features of *usr-i-tamth* (dysmenorrhoea) were reviewed to correlate with contemporary knowledge. The traditional Unani sources viz., Al Hawi fi'l Tibb (Continens Liber), Tarjuma Kamil al-Sana'a al-Tibbiyya, Al-Qanun fi'l Tibb (Canon of Medicine), Dhakhira Khawarizam Shahi, Tibb-i-Akbar, Iksir-i-A'zam, Kitab al-Kulliyat, and Kulliyat-i-Qanun were reviewed. Further, recent studies in the contemporary era were also browsed on the website. The causes of *usr-i-tamth* as per classical sources are distemperament, uterine diseases (atresia, inflammation, amenorrhoea, cancer, prolapse, ulcer, tenuous morbid matter, and cervical obstruction), psychological disturbances, environmental factors, menstrual irregularities, obesity and young age. Recent studies also prove that obesity, psychological disturbance, menstrual irregularities, environmental factors, uterine diseases and young age lead to dysmenorrhea. Unani classical sources are very much enriched with the informative knowledge related to menstruation and uterine pain/dysmenorrhoea and recent studies in contemporary proves the same. Hence, implementation of the traditional system of medicines in present-day era may play a vital role to restore health in a holistic way.

**Keywords** dysmenorrhoea, temperament, Unani medicines, *Usr-i-tamth*

### INTRODUCTION

Though recent advancement in medicine and developmental of newer technologies (robotic surgeries) for dealing lifestyle related (heart disease, cancer, diabetes, menstrual disorders and mental disorders) and other health issues are abundant. However, the increasing costs, the adverse effects of chemical based drugs of conventional health care and iatrogenic problems, patients are turning towards simpler and gentler therapies for improving the quality of life. Hence, the demand for Traditional Medicine or CAM is swiftly growing worldwide (Sharma, 2013). In Unani system of medicine, "health is considered as a state of physical, mental and social wellness. Healthy individual's body has equilibrium in humours and body functions normal" (Ahmad, 2007). Unani scholars surmised that a power known as *tabi 'at or al- tabi'a al-mudabbir ali'l-badan* (medicatrix naturae) maintains human body's health (Ahmad, 1980). Further, Logan and Selhub (2012) mentioned that "the healing power of nature (medicatrix naturae), has traditionally been defined as an internal healing response

designed to restore health". Imbalance in equilibrium of the body due to physical overexertion, wrong eating and poor sleeping habits, negative emotions and chronic mental stress and suppression of this power leads to diseases (Ahmad, 1980). In diseases, physician advises the individual to maintain balance and facilitate medicatrix naturae to restore health (Ahmad, 1980). This restoration is possible by using correct diet, cupping, bleeding, manipulation, massage, Unani drug treatment and surgery. Therefore, medical humanities attempt to restore the balance, to help re-humanize medicine. Personal belief systems, social principles, cultural practices, lifestyle modifications environmental changes, and technology have influenced gynecological health especially development of menstrual disorders (dysmenorrhea) and these have a major impact on health and societal costs worldwide (Spears, 2005).

Dysmenorrhoea (a Greek word) refers to painful uterine contractions during menstruation (Younesy et al., 2014). In Unani (Greco-Arabic) medicine, *usr-i-tamth* or *auja al-rahim* refers to pain associated with menstruation in which is analogous to dysmenorrhoea. It affects 50% women of childbearing age (Park et al., 2013). In India, the true incidence and prevalence of dysmenorrhoea are not well documented (Kumbhar et al., 2011). However, some recent prevalence studies conducted in India showed that the prevalence rate of dysmenorrhoea was 87.87% (Kural et al., 2015).

Earlier, many medical and gynecological texts recognized dysmenorrhoea as emotional or psychological problems. However, experimental and clinical research revealed the cause

\*Correspondence: Arshiya Sultana

E-mail: drarshiya@yahoo.com

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to be uterine prostaglandins and overproduction of vasopressin (Onur et al., 2012). The main line of treatment for dysmenorrhoea is pharmacologically [non-steroidal anti-inflammatory drugs causes suppression of Prostaglandin synthesis (Nahid et al., 2009) and have as anti-inflammatory, antipyretic and analgesic effects (Rahnama et al., 2012)]. Therefore, it is need of the hour to appraise our traditional literature and to correlate with current researches. Therefore, this exploration was endeavour to explore the traditional Unani texts for aetiopathogenesis and clinical features of menstrual pain/dysmenorrhoea and highlight the current researches conducted on dysmenorrhoea and correlates the aetiopathogenesis and clinical features with traditional literature.

## MATERIALS AND METHODS

For present manuscript, Unani classical treatises like Al-Qanun fi'l Tibb (Avicenna's Canon of Medicine by), Al Hawi fi'l Tibb (Rhazes's Continents), Jurjani's Dhakhira Khawarizam Shahi, Kamil al-Sana'a al-Tibbiyya, Firdaws al-Hikmat fi'l-Tibb (Rabban Tabari's Paradise of Wisdom), Kitab al-Mukhtarat Fi'l Tibb, Jamia al-Hikmat were explored for aetiopathogenesis and clinical features of menstrual pain. In addition, recent studies on a variety of scientific websites such as Cochrane Database, Google Scholar, Pubmed, Science Direct, Medline and Ovid search engines were explored. The terms such as menstrual cramps, dysmenorrhoea, prevalence, menstrual pain, pathophysiology, aetiopathogenesis, and risk factors for menstrual cramps/dysmenorrhoea were searched. Approximately, 15 textbooks and 100 papers were browsed, 15 papers were based on prevalence and population-based survey studies, other papers were based on contemporary treatment, complementary and alternative treatment for dysmenorrhoea.

## RESULTS

Dysmenorrhoea has been known since the dawn of recorded history. Past outlooks toward menstrual pain were frequently indifferent. However, the hundreds of medicaments for gynaecologic ailments scheduled in the various Materia Medica all over the ages provide in themselves a noticeably different explanation, articulating by proxy stories of illness that belief those found in the mainstream medical literature (Nezhat et al., 2012).

*Usr-i-tamth* is analogous to dysmenorrhoea in Unani medicine and defined as painful menstruation where bleeding is usually scanty and viscous (Jilani 1996) occasionally the pain is very severe leading to syncopal attack. Some classical texts such as Kitab al-Hawi fi'l Tibb Al-and Qanun fi'l Tibb used other terms for dysmenorrhoea such as *dard-i-rahim*, *waja'al-rahim* or *auja al-rahim* (uterine pain). Other classical Unani sources such as Kamil al-Sana'a al-Tibbiyya, Dhakhira Khawarizam Shahi, Haziq discusses *usr-i-tamth* (dysmenorrhoea) with menstrual disorders in or *ihibas al-tamth* (amenorrhoea) and in some texts like Al Qanun, Iksir-i-A'zam, Ilaj Hikmat, dysmenorrhoea is specifically summarized under the caption of *usr-i-tamth* or *waja'al-rahim* in or *auja al-rahim*.

### Aetiopathogenesis

Jalinus (Claudius Galen of Pergamon) (AD 129 - AD 216) assumed that suffocation of the womb was produced from excessive menstrual blood caused when the membranes that

anchor the uterus in place became engorged. He supposed that this excessive pressure on the ligaments caused the membranes to thicken and stretch with tension, which in turn pulled the uterus into contorted positions. In turn, Jalinus inferred that these contortions were causing the painful and violent uterine contractions, lacerations, and inflammation from the repeated physical friction. Soranus (AD 98-AD 138) the Greek gynaecologist from Ephesus was well versed that dysmenorrhoea can affect the older parous patients and described what may have been uterine subinvolution as its cause (O'Dowd, 2003).

Sina mentions in his compilation "Al-Qanun fi'l Tibb" the causes of *auja al-rahim* are *amraze al-rahim sabqa* (previous uterine diseases), *rataq* (atresia), *waram al-rahim* (inflammation of uterus), *saratan al-rahim* (uterine cancer), *isterkha-i-ribatat rahim* (laxity of ligaments), *quruh al-rahim* (uterine ulcer), *rutubat al-ghaleeza* (tenuous morbid matter), *su'mizaj-i-mukhtalif* (different distemperament), *riyah-i-ghaleez* (morbid gases), and *sudda al-rahim* (uterine obstruction). *Su'mizaj-i-mukhtalif* is abnormal temperament of an organ that is contrary to origin and responsible for uterine pain. The perception of such contrary temperament is pain.

Rushd (1188 AD) in his text Kitab al-Kulliyat also describes that usually, all types of *su'mizaj al-rahim* (distemperament of the uterus) can occur in the uterus, which leads to different types of diseases. *Su'mizaj-i-barid* (cold distemperament) interferes with *hararat-i-gharizia* as a result of this; *ghidh* that reaches the *rahim* is not digested properly and gets converted into *riyah* causing *tashannuj*. Jurjani (1903) discusses that the same condition may also occur after abortions. Sina (2010) described in his compilation "Al-Qanun fi'l Tibb" that distension of hollow organ by *reeh* (gas) from inside or infiltration of organ wall as in colic or it penetrates between muscle fibres and diffuse below the membrane and leads to pain in *riyah-i-ghaleez*. Abnormality in quality or quantity of *khilt* (humour) or both leads to formation and accumulation of *rutubat-i-ghaleeza/ghayrtabi'ikhilt* (abnormal humour) which triggers pain. *Ghaleez khun* (thick blood) is formed because of qualitative disturbance of *khilt*. Further, an excessive quantity of *ghayr tabi' balgham* (abnormal phlegm) and *sawda* (black bile) are formed on consumption of *ghaleez aghdhiya* (heavy diet), increases the viscosity of blood and leads to the formation of *sudda* (obstruction) hence, blood cannot flow easily through minute blood vessels as per text Haziq. Therefore, *rahim* undergoes forceful contraction with spasm during menstruation to expel the *ghaleez khun* which results in pain as mentioned in Al-Qanun fi'l Tibb. Normally, *quwwat dafi'a* (expulsive power) expels out the *fuzla* (waste products) that are not able to be transformed (into good humors) which have come to a particular organ from other place (Ahmad, 2008). However, *sudda* in '*uruq* weakens *quwwat dafi'a* hence, the waste products are not expelled and it leads to scanty flow of menses causing pain during menstruation as mentioned in Kitab al-Mukhtarat fi'l Tibb and Haziq.

Majusi described that *saratan al-rahim* (cancer) with an ulcer is associated with severe pain in the suprapubic area radiating to groin and back. He also discussed that cancer can occur on surface of the cervix or whole uterus and associated with other symptoms such as anorexia, loss of weight, amenorrhoea, ascites. Usually, in ulcerated *saratan al-rahim* the discharge is blackish with a foul smell and hard to feel.

The causes of *dard-i-rahim* mentioned in IX<sup>th</sup> Volume of "Al-Hawi fit Tibb" s are *waram al-rahim*, *saratan al-rahim*, *riyah-i-ghaleez*, *rataq*, *sil* (tuberculosis), *inqilab al-rahim* (inversion of uterus), *qillat-i-tamth* (oligomenorrhoea), *rataq*, *insidad fam al-rahim*, *nazf al-dam* (menorrhagia), *salayan al-*

*mani* (ovulatory discharge), *ihitbas al-tamth* (amenorrhoea), *masae* (polyp), *inzilaq al-rahim* (uterine inversion), *buthur al-rahim* (cervical erosion), displacement of uterus, and *quruh al-rahim* (uterine ulcer).

In the text, *iksir-i-A'zam*, the causes of *dard-i-rahim* are *su'mizaj*, *riyah-i-ghaleez*, *rutubat al-ghaleeza* (tenuous morbid matter), *quruh al-rahim*, *buthur al-rahim*, *saratan al-rahim*, *physiometra*, *inqilab al-rahim*, *shuqaq al-rahim* (uterine rupture), *mailan al-rahim* (displacement of uterus), excessive intercourse and postpartum period uterine pain or pain occurring during menstruation.

In the Unani text Makhazan al-Hikmat, *usr-i-tamth* is classified into five categories: *warami*, *tashannuji*, *suddi*, *baize*, and *gishai* (Jilani, 1996; Khan, 1995). The main cause for uterine pain in *usr-i-tamth warami* is *iltihab al-rahim* (inflammation of the uterus) or *imtila* (pelvic congestion) (Jilani, 1996). Involvement of the nerves causes as per text Kitab al-Kulliyat. *Usr-i-tamth tashannuji* and leads to spasmodic intermittent contraction in the uterus usually, noted in young and hypersensitive girls. *Sudda fam al-rahim*, *waram* or *rasooli* causing displacement of uterus leads to *usr-i-tamth suddi* as per text Haziq. Further, other Unani scholars surmised that *farbahi* is also one of the causes of *sudda*. Weakness of the uterus, depression, exposure to cold and excessive coitus causes *usr-i-tamth ghisha-i* as mentioned in Kitab al-Mukhtarat fi'l Tibb. Ovarian diseases cause *usr-i-tamth baize* (Jilani, 1996; Khan, 1995). Unani scholars hypothesized that in *waram al-rahim*, site of pain in pelvis varies according to the presence of *waram* (inflammation) on different parts of a uterus in mentioned in the text Kamil al-Sana'a al-Tibbiyya.

#### Clinical features (*Alamat marz*)

Unani scholars in their texts Al-Qanun fi'l Tibb, *iksir-i-A'zam* described that backache prior to menstruation is due to an involvement of uterus in and *ghayr tabi'i ghalaba balgham* and lower abdominal pain is an indication of *ihitraq madda* and *sudda* (Ahmad, 2008). During menstruation patient experiences spasmodic pain.

*Saratan al-rahim* associated with ulcer causes severe pain as mentioned in Kamil al-Sana'a al-Tibbiyya. Lower abdomen pain is mentioned is associated with radiation of pain to back thigh, knee and calf muscles. Lower abdominal pain during menstruation or pelvic pain is also associated with other systemic symptoms such as fatigue, headache, fever, anxiety, abdominal pain and syncope in severe pain as mentioned in Haziq. In *waram al-rahim* pain is felt in the umbilical region when inflammation is present in the entire uterus or upper part and below the umbilicus when it is the lower part. If posterior part of a uterus is involved pain is associated with backache and constipation whereas *waram al-rahim* in anterior part is associated with loin pain and urinary symptoms like dysuria and anuria. *Waram al-rahim* of the lateral sides is associated with fornical pain and sometimes results in the displacement of the uterus as per text Kamil al-Sana'a al-Tibbiyya and Al-Qanun fi'l Tibb. Sina and Razi were of an opinion that backache before menses is due to *imtila* of *badi rag* of back; this pain is accompanied by *hararat* and *zarbaan* in Al-Qanun fi'l Tibb and Kitab al-Hawi. According to Razi *waram al-rahim harr* can involve the entire uterus or any one part of it. *Usr-i-tamth suddi* is associated with severe pain, headache, giddiness, nervousness, nausea, vomiting and bleeding from nose. In *usr-i-tamth ghisha-i* woman has severe spasmodic pain with the passage of small bit of membranes. In *usr-i-tamth baize* usually the pain is felt on the left or right side of lower abdomen and it is associated with *waram* extending to the ovary, frequency of micturition and dysuria (Jilani, 1996).

## DISCUSSION

### Aetiopathogenesis

This extensive exploration of traditional sources showed that Unani scholars have mentioned that the causes of *usr-i-tamth* are simple or compound distemperament, psychological disturbance, obesity, and uterine diseases. In conventional medicine, the causes of dysmenorrhoea are approximately same as mentioned in Unani medicine; however in contemporary era dysmenorrhoea is divided in primary and secondary.

**Younger age:** Jilani (1996) mentioned that spasmodic dysmenorrhoea is more common in young girls; a similar finding is reported in recent studies (Calis et al., 2014).

**Uterine causes:** Primary dysmenorrhoea is defined as "menstrual pain that is not associated with macroscopic pelvic pathology, typically beginning during adolescence" (Unsal et al., 2010). Secondary dysmenorrhoea is defined as pain that occurs during menses, related with identifiable pathologic or iatrogenic conditions act on the uterus, tube, or ovaries and pelvic peritoneum (Smith, 1997). Elevated prostaglandins play a role in secondary dysmenorrhoea with concomitant pelvic pathology. Numerous factors involved in the pathogenesis of secondary dysmenorrhoea, includes congenital malformations (e.g., bicornuate uterus or subseptate uterus, transverse vaginal septum), intra uterine contraceptive device, endometriosis, fibroids, uterine polyps, adenomyosis, cervical stenosis or occlusion, uterine synechiae, pelvic inflammatory disease (PID), pelvic congestion syndrome, Allen-Masters syndrome and ovarian cysts and tumour (Calis et al., 2014). This validates the claim of Unani scholars as the causes of dysmenorrhoea mentioned are similar.

**Environmental factors:** Ajmal Khan and Gulam Jilani opined that exposure to cold leads to dysmenorrhoea because of vasoconstriction of uterine arteries. Recent studies have hypothesized that exposure to cold environmental temperature promotes vasoconstriction of uterine arteries and produces dysmenorrhoea (Spear, 2005). The prevalence of dysmenorrhoea, sick leaves and cold exposure existed among 73% of 213 poultry industry workers participating in a study (Mergler et al., 2005). Similar reports of dysmenorrhoea (71%) were related to cold exposure and physical workload at another poultry and canning factory (Messing et al., 1993). In the same study, 726 women were exposed to a cold environment (Spear, 2005). Environmental exposure to "herbicides, insecticides and by-products of industrial wastes such as polychlorinated biphenyls, dioxins, bisphenol A, atrazine and lindane promote menstrual disorders" (Agarwal and Agarwal, 2010).

**Menstrual irregularities:** Arzani (2002), Jurjani, Khan (1983), and Majusi in their respective texts surmised that menstrual cramps are also associated with irregular cycles, recent studies have reported similar findings that dysmenorrhoea was noted with both regular and irregular cycles (Begum, 2009; Shah et al., 2013). Further, Tomoko et al. (2007) also reported that dysmenorrhoea scores with irregular menstruation were significantly higher in the students compared to regular menstruation (Shah et al., 2013).

**Obesity:** Unani scholars also hypothesized that in obesity accumulation of excess fat compresses the uterine blood vessels and hamper the free flow of menstrual blood eventually causes lower abdominal pain, backache and heaviness in the body. French (2005) found that factors contributing to dysmenorrhoea include the "age of early menarche, increased menstrual bleeding, alcohol and tobacco use, low socioeconomic status, obesity and depression". Kaur (2014) in

their study concluded that obesity may be responsible for a higher rate of dysmenorrhoea among girls. Slightly higher rate of obesity among girls with dysmenorrhoea and unhealthy status of lipid profile among subjects reporting dysmenorrhoea simply reflects that obesity may be one of the factors but not the sole factor behind it. Research at biochemical levels like the study at the levels of prostaglandins is needed along with other environmental factors before coming to some conclusion.

**Psychological disturbance:** Jilani (1996), Jurjani, Khan (1983), and Majusi discussed that depression or psychological disturbances or stress as one of the causes of dysmenorrhoea, similar finding is reported in recent studies proves that psychological disturbance is one of the factors for dysmenorrhoea (French, 2005; Latthe et al., 2006; Patel et al., 2006). Wang et al. (2004) found that “important dose-response and temporal relationship between perceived stress in one menstrual cycle and the incidence of dysmenorrhoea in the subsequent cycle. Further, they noticed that compared to low stress throughout the cycle, perceived stress in the follicular phase of the menstrual cycle appeared to have a greater influence on subsequent dysmenorrhoea than did stress in the luteal phase; stress during both phases was associated with the highest risk of dysmenorrhoea in the following cycle”.

**Excessive intercourse:** Jilani (1996) and Khan (1983) assumed that excessive intercourse and dyspareunia can also cause uterine pain. Latthe et al. (2006) and Patel et al. (2006) in their studies reported that sexual assault was independently associated with dysmenorrhoea.

**Prevalence studies:** Primary dysmenorrhoea risk factors are an early age at menarche (< 12 years), family history, nulliparity, heavy or prolonged menstrual flow, smoking, obesity and anxiety whereas the risk factors for secondary dysmenorrhoea are fibroids, tubo-ovarian abscess, PID, ovarian torsion and endometriosis (Calis et al., 2014). Latthe et al. (2006) conducted a systematic review of risk factors for dysmenorrhoea. Several factors were identified such as early menarche, associated perimenstrual somatic complaints, psychological disturbance, younger age, pelvic infections, prolonged or aberrant menstrual flow, low body mass index, smoking, previous sterilization, and a history of sexual assault. Further, they found that higher parity, physical exercise, fish intake, a stable relationship, and use of oral contraceptives were protective.

Patel et al. (2006) in their study found that severity of depression, anxiety, somatic complaints, and other gynecological complaints, dysmenorrhoea is associated with increased intensity of dysmenorrhoea. Furthermore, the authors suggested that dysmenorrhoea should view as a multifactorial disorder. However, they found no association with tobacco use, specific types of contraceptive use or RTIs. In general, increased severity of dysmenorrhoea has been suggested related to age, higher body mass index, nulliparity, smoking, earlier age at menarche, longer and heavier menstrual flow (Ju et al., 2014).

**Pathophysiology:** Unani scholars surmised that in *usr-i-tamths*, *su' mizaj*, and accumulation of *khilt*, causes an alteration in the uterine blood vessels and hamper the free flow of menstrual blood (Jurjani, 1903) eventually causes lower abdominal pain, backache, and heaviness in the body. Jurjani believed that in anorexia, *su' mizaj khushk* (dry distemperament) compresses and blocks the blood vessels and *sue' mizaj sard sada* freezes the *mawad* making the blood thick causing *usr-i-tamth suddi*.

Ke et al. (2012) surmised that decrease microcirculation or reductions in local muscle blood flow in the uterus leads to ischemia, as a result disturbs cellular metabolic status causes significant deterioration in acid-base status with increased acidosis. During dysmenorrhoea, the corresponding local

organic ischemia is coupled with increased oxidative stress because of increased levels of reactive oxygen species, such as superoxide and hydrogen peroxide that are accountable for destructive processes in organic tissues. This pathophysiology very well correlates and explains the Unani concept that some dysfunction (distemperament) occurs in the uterus that leads to *usr-i-tamth* and *qillat-i-tamth*.

In primary dysmenorrhoea there is “abnormal and increased prostanoid and possibly eicosanoid secretion that in turn induces abnormal uterine contractions. The contractions reduce uterine blood flow, leading to uterine hypoxia” (Dawood, 2006). Different theories are proposed for the etiology of primary dysmenorrhoea such as the hormonal, psychological, nervous and genetic theory. Hormones are hypothesized key influencers for triggering menstrual pain. Dysmenorrheics have “higher levels of prostaglandins, leukotrienes, vasopressin, hormones and platelet-activating factor in menstrual fluid (Spear, 2005). Together these key elements make possible pelvic pain associated with arterial vasoconstriction, blood clot formation, menorrhagia, and increased uterine contractility”. Progesterone is the main cause of the cascade of events leading to menstrual cramps. At the end of the secretory phase, progesterone levels fall causes uterine spiral arteries of the endometrium to constrict, create ischemia and necrosis and pain ensues. Disintegrating endometrial cells releases prostaglandin  $F_{2\alpha}$  which stimulates free nerve endings, consequently produce pain. Moreover, Prostaglandin  $F_{2\alpha}$  increases platelet aggregation that causes blood clots to accompany dysmenorrhoea. Some women experience menorrhagia/heavy menstrual bleeding during the first three days of menses that correlates with a greater amount of E-series prostaglandins attributed to high levels of Prostaglandin E receptors in endometrial tissue (Spear, 2005). This intensifies the uterine activity and vasoconstriction as the uterine and vasoconstrictive effects of the other prostaglandins are less hampered. Increased levels of circulating vasopressin during menstruation can produce dysrhythmic uterine contractions (Dawood, 2006). Other theories hypothesized are the neuronal hypothesis, behavioural and psychological factors (Calis et al., 2014).

Jilani (1996) hypothesized that *usr-i-tamth tashannuji* leads to spasmodic intermittent contraction of the uterus usually seen in young and hypersensitive girls. Currently, it is hypothesized that the pathway of transporting neural impulses is significant to the perception of dysmenorrheic pain. Reflex pattern can generate a chronic hyper-excited state of stimulus facilitating muscle spasms, ischemia, and inflammation. The uterus, lower abdominal and back muscles, share same sensory and motor pathways in the nervous system, hence permits for the development of referred pain patterns. The decreased threshold increases sensitivity to pain and predisposes women to experience severe dysmenorrhoea (Spear, 2005).

Currently, data propose that “endometriosis pain can result from neuronal invasion of endometriotic implants that later develop a sensory and sympathetic nerve supply, which may undergo central sensitization. This leads to a persistent hyper excitability of the neurons and subsequent persistent pain, in spite of surgical excision”. Their severity shows a relationship with increasing number of ectopic foci and degree of invasion. Increased prostaglandin production found in adenomyotic tissues compared with normal myometrium causes dysmenorrhoea (Schorge et al., 2008). PID is an ascending infection that develops during or post menses; usually secondary dysmenorrhoea develops in chronic PID. The common complication of PID is tubo-ovarian abscess (loculated pus collection) seen with the fallopian tubes or

ovaries (Calis et al., 2014). Uterine leiomyomata is a common cause of dysmenorrhoea as they enlarge when stimulated by estrogens.

### Clinical features (Alamatmarz)

**Symptoms:** Clinical features of primary dysmenorrhoea, the duration of the pain is between eight and 72 h. Pain occurs just before or at onset of menstruation, spasmodic/labor like and typically felt in the lower abdomen, and infrequently radiates to the back and thighs (Berek, 1996; Smith, 1997) and often associated with unremarkable pelvic examination findings (including rectal) (Calis et al., 2014). Other systemic symptoms include nausea, vomiting, diarrhea, headache, dizziness and in severe cases syncope and collapse. Symptoms usually become less severe or disappear once the woman has experienced childbirth for the first time. They also frequently become less severe with age. In primary dysmenorrhoea onset occurs shortly after menarche ( $\leq 6$  months) (Calis et al., 2014); thus corresponding to the beginning of ovulation usually seen among younger women up to 25-30 years (Arulkumaran et al., 2005). Unani scholars have mentioned same clinical features in their respective treatises. Further, in conventional medicine literature it is mentioned that adnexal pain, uterine or cervical motion tenderness is observed in tubo-ovarian abscess. In a hemorrhagic ovarian cyst patient has acute pelvic or abdominal pain associated with nausea and vomiting, on pelvic examination an adnexal mass is revealed with tenderness. The Centre for Disease Control guidelines for the diagnosis of PID is based on the presence of 3 major criteria (abdominal pain, adnexal pain, and cervical motion tenderness), and 1 minor criterion (abnormal vaginal discharge, pyrexia, leukocytosis, positive cervical cultures, gram-negative stain, intracellular diplococci, or white blood cells on vaginal smear) (Calis et al., 2014). About one-third of women with adenomyosis have symptoms. Characteristically, endometriosis-associated dysmenorrhoea precedes menses by 24 to 48 h and demonstrated a positive correlation between the severity of dysmenorrhoea and the risk of endometriosis. About one third of women with adenomyosis have symptoms. Dysmenorrhoea and menorrhagia are common in adenomyosis (Scheorge et al., 2008). Uterine leiomyomata are more common in black women (9 times) compared to white women. In addition to dysmenorrhoea, patients may present with menorrhagia, abdominal distension, or pressure. Pelvic examination may reveal a uterine mass or irregularity (Calis et al., 2014). Clinical features of secondary dysmenorrhoea are often nonspecific and are more referable to the underlying pathophysiology. The symptoms may be slightly milder, and more general in nature, than those of primary dysmenorrhoea (Smith, 1997).

Secondary dysmenorrhoea usually occurs years after menarche (Berek, 1996). It usually develops after a phase of a painless cycle (Calis et al., 2014). The pain of secondary dysmenorrhoea often begins 1-2 weeks prior to menses and persists until a few days after the cessation of bleeding (Berek, 1996). Usually, it follows after initial years of a normal painless cycle. The pain is continuous dull aching or dragging (Arulkumaran et al., 2005).

Heavy menstrual flow or irregular bleeding, pelvic abnormality, infertility, dyspareunia, vaginal discharge, poor response to non steroidal anti-inflammatory drugs or oral contraceptives also indicates secondary dysmenorrhoea. Pelvic abnormality on physical examination (consider endometriosis, PID, pelvic adhesions and adenomyosis) indicates secondary dysmenorrhoea (Calis et al., 2014).

In Chinese medicine, menstrual symptoms are caused by either the stagnation of *qi* or blood or inadequate blood in the

body. The general treatment principles of Chinese medicine for dysmenorrhoea are to tonify the Kidney Deficiency, clear the accumulation of Liver Fire, dissipate Cold, expel Wind, and move *qi* and Blood (Wang et al., 2009). A similar concept has been briefed in Unani classical sources that in *usr-i-tamths*, *su' mizaj* and accumulation of *khilt*, causes an alteration in the uterine blood vessels and hamper the free flow of menstrual blood eventually causes lower abdominal pain, backache and heaviness in the body. Jurjani believes that in *laghari*, *su' mizaj khushk* (dry distemperament) compresses and blocks the blood vessels and *sue' mizaj sard sada* freezes the *mawad* making the blood thick causing *usr-i-tamth suddi*.

**Management:** The three different modalities for treatment of any disease in Unani medicine are *ilaj bi'l-tadbir* (regimental therapy), *ilaj bi'l-dawa* (pharmacotherapy), and *ilaj bi'l-yad* (surgery) (Ahmad, 1980). The treatment for pain amelioration is treating the cause or produce analgesia as per text Al-Qanun fi'l Tibb. Bed rest, avoid strenuous exercise and work. Avoid psychological stress. Avoid stress, anxiety, excessive coitus and strenuous work such as running, jumping and quickly moving down of stairs. Light and nutritious diet is advocated in Haziq. Application of *hijama bila shart* (dry cupping) for pain relief is useful in menstrual cramps in mentioned in Kitab al- Hawi recently a preliminary study has shown that dry cupping is useful in menstrual cramps (Sultana et al., 2010). Further, hot fomentation, sitz bath with hot decoction, massage, suppository and pessary can be used for local application. Many herbs are also useful for the treatment of menstrual cramps such as fenugreek, chamomile, *Cassia fistula* Linn, *Artemisia vulgaris*, *Myristica fragrans*, *Ferula asafetida*, fennel, *Zingiber officinale*, *Foeniculum vulgare* Mill (Bokaie et al., 2013), *Cuminum cyminum*, *Thymus vulgaris* (Salmalian et al., 2014), *Anethum graveolens* (Heidarifar et al., 2014), *Trigonella foenum-graecum*, combination of *anisoon*, *saunf*, *zafran* (Nahid et al., 2009), *chaturbeeja* (*Trigonella foenum-graecum*, *Lepidium sativum*, *Nigella sativa*, and *Trachyspermum ammi*) (Kamini and Kiran, 2013) which are proven for their efficacy in dysmenorrhoea.

## CONCLUSION

Unani classical sources are very much enriched with the information related to menstruation and uterine pain/dysmenorrhoea. Further, aforementioned recent studies prove the claims of Unani scholars as various aetiological factors and clinical features correlates with aetiological factors and clinical features mentioned in a contemporary era.

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## CONFLICT OF INTERESTS

The authors have no conflicting financial interests.

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