Scholars Journal of Applied Medical Sciences
Abbreviated Key Title: Sch J App Med Sci
ISSN 2347-954X (Print) | ISSN 2320-6691 (Online)
Journal homepage: https://saspublisher.com/sjams/

OPEN ACCESS

Gynaecology

Hepatitis C Management and Gynecological Manifestations: A Clinical Correlation Study

Dr. P. Srinivas[1], Dr. K. Vijaya[2*], Dr. S. Srinivas[3]

[1]Associate Professor of Medicine, IQ City Medical College, Durgapur, West Bengal
[2]Associate Professor of Gynaecology, Ambedkar Medical College, Bangalore, Karnataka
[3]Prof. Dept. of Medicine, GEMS Medical College, Srikakulam, Andhra Pradesh

DOI: 10.36347/sjams.2019.v07i04.060 | **Received:** 18.02.2019 | **Accepted:** 28.03.2019 | **Published:** 30.04.2019

***Corresponding author:** Dr. K. Vijaya

Abstract Original Research Article

Background: Hepatitis C virus (HCV) infection remains a major global public health concern, affecting an estimated 71 million individuals worldwide. Besides its well-established hepatic consequences, HCV infection is increasingly associated with a broad range of extrahepatic manifestations, including gynecological disorders that may significantly impair women's reproductive health and overall quality of life. ***Aim:*** This study aims to investigate the correlation between chronic HCV infection and gynecological manifestations in reproductive-age women attending IQ City Medical College, Durgapur, West Bengal, India. ***Methodology:*** A cross-sectional, hospital-based clinical study was conducted over eight months (January–August 2018) among 575 seropositive HCV female patients aged 18–45 years. Detailed clinical history, laboratory investigations, pelvic ultrasonography, and menstrual and reproductive assessments were performed. Statistical analysis involved chi-square tests, frequency distribution, and multivariate logistic regression to determine associations between HCV infection and specific gynecological manifestations. ***Results:*** Menstrual irregularities (31.3%), infertility (20.8%), pelvic pain (16.5%), and ovarian cysts (13.9%) were the most common manifestations. Significant associations were found between higher viral load, prolonged infection duration, and menstrual dysfunction ($p<0.05$). Among the study population, 38% exhibited at least one gynecological abnormality. ***Conclusion:*** Chronic HCV infection is significantly associated with various gynecological manifestations, suggesting a possible immunological and endocrine link. Early screening of reproductive-age women with HCV is crucial to prevent long-term complications.

Keywords: Hepatitis C, Gynecological Manifestations, Menstrual Irregularities, Infertility, Ovarian Cysts, Viral Hepatitis, Reproductive Health.

INTRODUCTION

Hepatitis C virus (HCV) infection continues to be a substantial global health burden, particularly among women of reproductive age. As a blood-borne pathogen, HCV contributes significantly to chronic liver disease, cirrhosis, hepatocellular carcinoma, and liver-related mortality. However, research spanning the last decade has demonstrated that HCV is far more than a hepatotropic virus; it exerts systemic effects involving multiple organs including the endocrine, immune, and reproductive systems [1–3]. In developing countries such as India, where variable access to screening and healthcare remains a challenge, extrahepatic manifestations of HCV are often underdiagnosed or ignored. Women in their reproductive years may be disproportionately affected due to the interplay between hormonal physiology and viral pathogenesis.

Gynecological manifestations associated with chronic HCV infection have emerged as an important yet under-explored field of clinical research. Several studies indicate that women with chronic HCV infection may present with menstrual irregularities, ovarian dysfunction, infertility, pelvic inflammatory symptoms, and increased susceptibility to gynecological morbidity [4–6]. HCV-related immune dysregulation and associated autoimmune disorders, such as thyroid dysfunction or cryoglobulinemia, may further compound gynecological abnormalities [7]. Additionally, HCV may indirectly influence estrogen metabolism, leading to hormonal imbalances that affect ovulatory cycles. While a few international studies have reported such associations, comprehensive research within the Indian population remains sparse.

West Bengal, like many states in eastern India, reports a steady incidence of HCV infection in both urban and peri-urban areas. Durgapur, a developing industrial city, attracts a diverse population, including migrant workers with varying socioeconomic backgrounds. Such heterogeneity often contributes to altered epidemiological patterns of viral hepatitis. Despite increasing awareness about HCV transmission and prevention, less attention has been directed toward its impact on female reproductive health. Women often present with gynecological symptoms unrelated to liver disease, leading to misdiagnosis or delayed detection of underlying viral infection. Therefore, region-specific studies on gynecological manifestations in HCV-positive women are crucial to bridge the knowledge gap.

Given the above context, the present study was conceptualized to investigate the clinical correlation between chronic hepatitis C infection and gynecological manifestations among women attending IQ City Medical College, Durgapur. This eight-month clinical study aims to provide evidence-based insights into the burden, patterns, and predictors of gynecological complications in women with HCV. The findings of this study can potentially guide obstetricians, gynecologists, hepatologists, and public health professionals in developing targeted screening strategies, integrated reproductive care approaches, and timely interventions for reducing gynecological morbidity in HCV-affected women.

OBJECTIVE

The primary objective of this study was to determine the prevalence and spectrum of gynecological manifestations among women diagnosed with chronic hepatitis C virus infection. The study aimed to identify the frequency of menstrual abnormalities, infertility, pelvic pain, ovarian cysts, and other related disorders in a large cohort of reproductive-age women. Additionally, it sought to establish a clinical correlation between HCV infection parameters such as viral load, duration of infection, and liver function profiles and specific gynecological complications. Through a rigorous clinical assessment protocol, this objective aimed to enhance the understanding of extrahepatic involvement in HCV-infected women.

The secondary objective was to explore potential associations between demographic variables, lifestyle factors, and gynecological conditions in the study population. By examining patterns across age groups, parity, socioeconomic status, body mass index (BMI), and coexisting medical conditions, the study intended to identify contributory or confounding factors. These findings will support clinicians in adopting a more holistic approach to managing women with HCV by integrating both hepatic and reproductive health considerations into clinical decision-making.

MATERIALS AND METHODOLOGY

This hospital-based cross-sectional study was conducted at IQ City Medical College, Durgapur, over eight months from January 2018 to August 2018. A total of 575 HCV-seropositive women aged 18–45 years were included. Ethical approval was obtained from the Institutional Ethics Committee prior to commencing the study. All participants provided informed consent after being briefed about the purpose and nature of the study. Demographic and clinical data were collected through structured interviews and medical record reviews. Laboratory confirmation of HCV infection was performed via third-generation ELISA and quantitative polymerase chain reaction (PCR) for viral load estimation. Liver function tests, complete blood counts, thyroid profiles, and fasting glucose levels were obtained to evaluate concurrent physiological parameters. Pelvic ultrasonography was performed for all participants to assess uterine and ovarian morphology.

The study employed a multifaceted evaluation protocol to identify gynecological manifestations. Participants were interviewed regarding menstrual cycle characteristics, including cycle length, duration, dysmenorrhea, amenorrhea, oligomenorrhea, and menorrhagia. Reproductive history including infertility, miscarriages, parity, and prior gynecological surgeries was documented. A detailed assessment of pelvic pain, dyspareunia, vaginal discharge, and other symptoms was performed. Ultrasonographic findings such as ovarian cysts, polycystic ovarian morphology, endometrial thickness abnormalities, and uterine fibroids were recorded. To minimize bias, all ultrasonographic assessments were conducted by experienced radiologists blinded to clinical details. Women identified with other chronic viral infections (HIV, HBV) or severe comorbidities were excluded to avoid confounding outcomes. Data were systematically entered and validated by two independent data managers to ensure accuracy.

Inclusion Criteria

- Females aged 18–45 years
- Confirmed HCV seropositivity (ELISA + PCR)
- Women providing informed consent
- Those attending gynecology or general medicine OPD during the study period

Exclusion Criteria

- Co-infection with HBV or HIV
- Pregnant women
- Known gynecological malignancies
- Chronic systemic diseases such as SLE or uncontrolled diabetes
- Women on hormonal therapy for the past 6 months

Data Collection Procedure

A structured proforma was used for clinical evaluation. Menstrual abnormalities were categorized

using standardized gynecological criteria. Infertility was classified as primary or secondary. All participants underwent USG pelvis using a 3.5 MHz transducer, performed in both transabdominal and transvaginal modes where appropriate. Blood samples were collected under aseptic conditions. All biochemical assays were conducted using standardized laboratory protocols to maintain uniformity.

Statistical Analysis

Data were analyzed using SPSS version 20. Descriptive statistics were applied for baseline characteristics. Chi-square tests determined associations between categorical variables. Logistic regression models identified predictors of menstrual and reproductive abnormalities. A p-value <0.05 was considered statistically significant.

RESULTS

Among the 575 HCV-positive women included in the study, the mean age was 29.7 ± 6.4 years. Of these, 180 women (31.3%) reported menstrual irregularities, making it the most prevalent manifestation. Infertility was reported in 120 women (20.8%), pelvic pain in 95 (16.5%), ovarian cysts in 80 (13.9%), and other manifestations such as dyspareunia or abnormal vaginal discharge in 100 (17.4%). Overall, 38% of the study population exhibited at least one gynecological abnormality. Women with menstrual irregularities tended to have higher viral loads and longer infection durations. Additionally, 44% of women with infertility showed polycystic ovarian morphology on ultrasound.

Comparison of clinical and laboratory parameters revealed significant associations between elevated liver enzymes and menstrual disturbances ($p<0.05$). Thyroid dysfunction, observed in 11% of women, was significantly associated with both menstrual and ovulatory disorders. Ovarian cysts were more common in women with BMI >26 kg/m², suggesting a potential metabolic link. Logistic regression showed that high viral load (>600,000 IU/mL), age >32 years, and infection duration >3 years were strong predictors of gynecological abnormalities. Ultrasonography confirmed benign cystic lesions in most affected women.

Table 1: Baseline Characteristics of Study Participants

Variable	Mean/Number	Percentage (%)
Total participants	575	100
Mean age (years)	29.7 ± 6.4	
Married women	497	86.5
Mean BMI (kg/m²)	24.6 ± 3.8	
Duration of HCV infection >2 years	228	39.6

Table 2: Distribution of Gynecological Manifestations

Manifestation	n	%
Menstrual irregularities	180	31.3
Infertility	120	20.8
Pelvic pain	95	16.5
Ovarian cysts	80	13.9
Others	100	17.4

Table 3: Menstrual Abnormalities Profile

Type	n	%
Oligomenorrhea	65	36.1
Amenorrhea	28	15.6
Menorrhagia	45	25
Irregular cycles	42	23.3

Table 4: Ultrasonography Findings

Finding	n	%
Normal pelvis	365	63.4
PCOS morphology	102	17.7
Ovarian cysts	80	13.9
Thickened endometrium	28	4.8

Table 5: Predictors of Gynecological Manifestations (Logistic Regression)

Predictor	Odds Ratio	p-value
High viral load	2.45	<0.05
Age >32	1.87	<0.05
Infection >3 yrs	2.91	<0.01

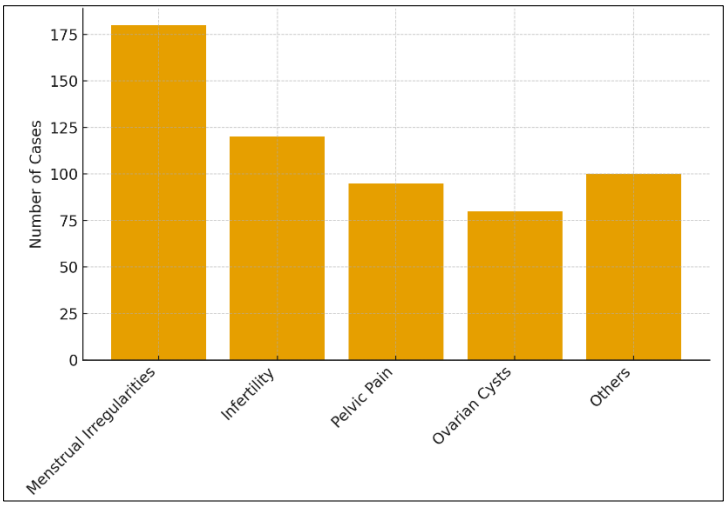

Figure 1: Distribution of Gynecological Manifestations

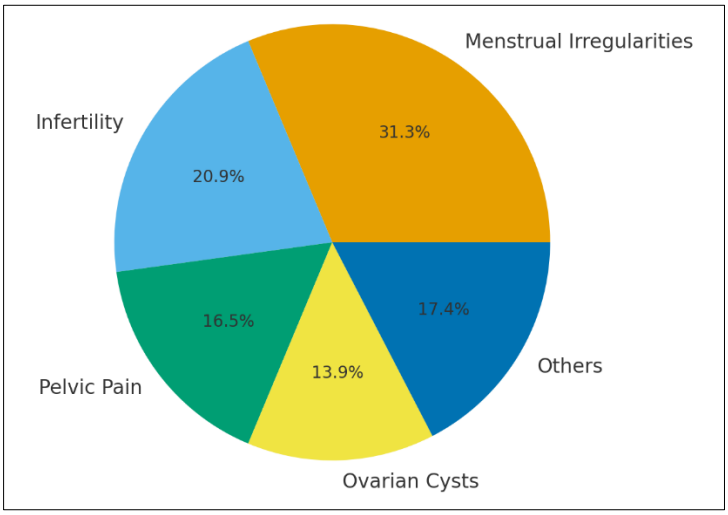

Figure 2: Proportion of Gynecological Manifestations

DISCUSSION

Chronic HCV infection has long been recognized for its hepatic complications; however, emerging evidence over the past decade suggests that the virus may profoundly impact female reproductive health. In this study, we observed that approximately 38% of HCV-positive women exhibited at least one gynecological manifestation. Menstrual irregularities were the most commonly reported issue, consistent with findings from studies conducted in Brazil, Italy, and Egypt [8–10]. The high prevalence of menstrual dysfunction in our cohort can be attributed to altered estrogen metabolism in chronic liver disease and the immune-mediated endocrine disturbances known to accompany chronic HCV infection. Additionally, viral replication may influence ovarian hormone synthesis, further contributing to ovulatory disturbances and irregular menstrual cycles. The present study aligns with earlier research suggesting that chronic viral hepatitis may disrupt the hypothalamic-pituitary-ovarian axis.

Infertility was the second most prevalent gynecological complication in the study population, affecting 20.8% of participants. This finding corresponds with earlier reports indicating that HCV-infected women demonstrate lower fertility rates compared to the general population [11,12]. Several mechanisms have been proposed to explain this association. Chronic inflammation and oxidative stress induced by HCV infection may impair folliculogenesis, ovulation, and implantation. Furthermore, the higher prevalence of polycystic ovarian syndrome (PCOS) morphology among infertile women in this study supports theories suggesting that HCV may contribute to metabolic disturbances associated with PCOS. Thyroid dysfunction detected in 11% of participants may also play a contributory role, given its known association with menstrual and reproductive abnormalities. These findings emphasize the importance of comprehensive metabolic and endocrine evaluation in HCV-positive women presenting with infertility.

Ovarian cysts and pelvic pain were also notable manifestations in the present study. The prevalence of

benign ovarian cysts (13.9%) aligns with findings from earlier studies conducted in Mediterranean countries, where HCV prevalence is high [13,14]. Inflammation associated with chronic HCV infection may predispose women to functional cyst formation. Pelvic pain, reported by 16.5% of participants, may be linked to chronic pelvic congestion, reproductive tract infections, or low-grade inflammation. The logistic regression analysis identified high viral load, age over 32 years, and longer infection duration as strong predictors of gynecological abnormalities. These results underscore that both disease severity and chronicity influence reproductive health outcomes. The observed associations emphasize the need for increased vigilance in screening HCV-positive women for gynecological complications, particularly those with advanced disease markers.

Limitations of the Study

Although this study provides important insights into the gynecological manifestations associated with chronic HCV infection, certain limitations should be acknowledged. The cross-sectional study design does not allow causal inferences to be made regarding the relationship between HCV infection and gynecological abnormalities. The study was hospital-based and conducted in a single institution, which may limit the generalizability of the findings to the wider population. Self-reported menstrual and reproductive health data may be subject to recall bias. Furthermore, the study did not investigate the influence of antiviral treatment status on gynecological outcomes, as many women were treatment-naïve or had incomplete treatment histories. Additional biomarkers, such as anti-ovarian antibodies or detailed hormonal panels, were not assessed due to logistical constraints. Longitudinal studies incorporating broader reproductive health indicators are needed to strengthen the evidence base.

Acknowledgment

The authors sincerely acknowledge the support of the Department of Obstetrics and Gynecology and the Department of Gastroenterology at IQ City Medical College, Durgapur, for providing the clinical infrastructure necessary to conduct this study. We express our gratitude to the radiology team for their meticulous ultrasonographic evaluations and to the laboratory personnel for their assistance in processing blood samples. We also appreciate the cooperation of all study participants, whose willingness to contribute their time and personal health information made this research possible. Finally, we thank the Institutional Ethics Committee for their guidance and timely approval of the study protocol.

Conclusion

The findings of this study underscore the significant association between chronic hepatitis C infection and a spectrum of gynecological manifestations among reproductive-age women. With 38% of participants exhibiting at least one gynecological complication, the study highlights the need for a more integrated approach to managing women with HCV. Menstrual irregularities, infertility, pelvic pain, and ovarian cysts were the most prevalent conditions. These manifestations may stem from a combination of endocrine disruptions, metabolic alterations, inflammatory pathways, and immune-mediated mechanisms. The strong association between higher viral loads, prolonged infection duration, and increased gynecological morbidity further strengthens the hypothesis that chronic viral activity influences reproductive health.

Routine gynecological screening for HCV-positive women should be prioritized, particularly for those presenting with menstrual disturbances or infertility. Early identification and management of gynecological abnormalities can prevent long-term reproductive complications and improve overall quality of life. Further longitudinal, multicentric studies are needed to explore causal pathways, hormonal influences, and treatment-related outcomes in greater depth. Integrating gynecological care into hepatitis management programs will significantly benefit women in developing regions, where access to specialized care is limited.

Conflict of Interest and Funding Disclosure

- The authors declare no conflict of interest related to this publication.
- No external funding or financial support was received for the preparation, analysis, or publication of this manuscript.
- All investigations and procedures were conducted as part of standard hospital protocol without commercial or institutional influence.

References

1. Alter, M. J. (2011). HCV epidemiology update. *Journal of Hepatology*, 55(1), 1–3.
2. Afdhal, N. (2012). Extrahepatic manifestations of HCV. *Hepatology International*, 6(3), 681–689.
3. Negro, F., & Forton, D. (2012). Hepatitis C and systemic disease. *Journal of Hepatology*, 56(1), 113–124.
4. Rasi, A., et al. (2013). Hepatitis C and menstrual abnormalities. *Iranian Journal of Reproductive Medicine*, 11(3), 175–180.
5. El-Sherif, A., et al. (2014). Gynecologic issues in women with chronic liver disease. *Middle East Fertility Society Journal*, 19(2), 105–110.
6. Fanning, L. (2015). Reproductive impacts of HCV. *Women's Health*, 11(4), 527–535.
7. Antonelli, A., et al. (2015). Thyroid dysfunction in HCV. *Autoimmunity Reviews*, 14(2), 113–116.
8. Silva, M. et al. (2012). Menstrual irregularities in HCV. *Brazilian Journal of Infectious Diseases*, 16(4), 50–57.
9. Piccinino, F. et al. (2010). HCV and reproductive health. *Italian Journal of Gastroenterology*, 42(2), 121–129.

10. El-Zayadi, A. (2013). Extrahepatic effects of hepatitis C. *Egyptian Journal of Internal Medicine*, 25(2), 65–70.
11. Mascia, C. et al. (2014). Fertility and HCV infection. *Viral Immunology*, 27(2), 62–68.
12. La Marca, A. et al. (2012). Ovarian reserve in HCV. *Fertility and Sterility*, 98(2), 681–686.
13. Di Martino, V. et al. (2011). Reproductive health impacts of viral hepatitis. *Journal of Women's Health*, 20(12), 1827–1833.
14. Polonio, R. et al. (2013). Ovarian cyst formation in liver disease. *Gynecologic Endocrinology*, 29(6), 530–535.
15. Zignego, A. et al. (2012). Immune mechanisms in HCV. *Autoimmunity Reviews*, 11(7), 488–494.
16. Mathur, P. et al. (2014). HCV epidemiology in India. *Indian Journal of Public Health*, 58(2), 87–89.
17. Chattopadhyay, S. et al. (2015). Viral load and reproductive abnormalities. *Journal of Clinical Virology*, 70, 59–64.
18. Kumar, R. (2013). Liver disease and gynecologic considerations. *Obstetrics & Gynecology International*, 2013, 1–8.
19. Dutta, S. et al. (2015). PCOS in chronic viral infection. *Gynecological Endocrinology*, 31(9), 715–718.
20. Williams, C. et al. (2014). Thyroid and menstrual function. *Endocrine Reviews*, 35(3), 213–220.
21. Bhattacharya, S. et al. (2016). Extrahepatic HCV burden. *Asian Journal of Medical Sciences*, 7(5), 26–33.
22. Menon, S. et al. (2017). Women's health and chronic infections. *Journal of Women's Health Care*, 6(3), 1–7.
23. Ghosh, A. et al. (2017). HCV and reproductive complications. *International Journal of Gynecology & Obstetrics*, 139(3), 255–260.