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Highlights

- Cases of Congenital Syphilis
- Review of Outcomes in Patients
- Low Anterior Resection (LAR)
- Miliary Tuberculosis in Pregnancy

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VOLUME 23 ISSUE 2 VERSION 1.0

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Possible Impact of the Construction of the Belo Monte Hydroelectric Power Plant on Cases of Congenital Syphilis in the Xingu Region

By Evellyn Vitória Sousa de Loureiro, Osvaldo Correia Damasceno & Ciro Francisco Moura de Assis Neto

Universidade Federal do Pará

Abstract- Syphilis is considered a serious public health problem in Brazil and worldwide. The disease is especially worrying during pregnancy, as the mother can transmit the infection to her fetus, causing congenital syphilis. In this context, few articles have established a causal relationship between the growth in the number of cases of gestational and congenital syphilis in the Xingu Region and the construction of the Belo Monte Hydroelectric Plant.

Objective: This study aims to analyze the influence of the intense migratory flow resulting from the construction of the Belo Monte Hydroelectric Power Plant on the cases of congenital syphilis.

Keywords: pregnancy complications, infectious; syphilis; congenital syphilis; epidemiology; analytical epidemiology.

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Possible Impact of the Construction of the Belo Monte Hydroelectric Power Plant on Cases of Congenital Syphilis in the Xingu Region

Evellyn Vitória Sousa de Loureiro [α], Osvaldo Correia Damasceno [σ] & Ciro Francisco Moura de Assis Neto [ρ]

Abstract- Syphilis is considered a serious public health problem in Brazil and worldwide. The disease is especially worrying during pregnancy, as the mother can transmit the infection to her fetus, causing congenital syphilis. In this context, few articles have established a causal relationship between the growth in the number of cases of gestational and congenital syphilis in the Xingu Region and the construction of the Belo Monte Hydroelectric Plant.

Objective: This study aims to analyze the influence of the intense migratory flow resulting from the construction of the Belo Monte Hydroelectric Power Plant on the cases of congenital syphilis.

Methodology: This is an ecological study of congenital syphilis reported in the Xingu Region from January 2007 to 2019, using data obtained from the Information System of Notification Grievances.

Results: It was found that there was an influence of the construction of the Belo Monte hydroelectric plant on the number of cases of congenital syphilis in the region. 294 cases of congenital syphilis were reported. The most affected pregnant women were between 16 and 20 years old, were brown, had incomplete primary education and lived in the urban area. The study revealed numerous shortcomings in prenatal care provided in the Xingu Region.

Keywords: pregnancy complications, infectious; syphilis; congenital syphilis; epidemiology; analytical epidemiology.

I. Introdução

Atualmente, a sífilis é um grave problema de saúde pública no Brasil, e no mundo, estimando-se que 12 milhões de pessoas sejam infectadas a cada ano (OMS, 2008). A doença é especialmente preocupante no período gestacional, pois a mãe pode transmitir a infecção ao seu feto, que pode desenvolver sífilis congênita (OMS, 2008). A sífilis congênita é uma doença grave, responsável por altos índices de morbimortalidade fetal e neonatal (WHO, 2008; WHO, 2016). Segundo a Organização Mundial de Saúde, há mais recém-nascidos acometidos por sífilis congênita do que por qualquer outra infecção neonatal, incluindo a infecção pelo Vírus da Imunodeficiência Humana (WHO, 2008; WHO, 2016).

A sífilis gestacional é definida como a infecção por *Treponema pallidum* em mulheres grávidas (BRASIL, 2019; OMS, 2008). A doença em gestantes é semelhante à sífilis adquirida na população geral em relação ao modo de transmissão, quadro clínico, diagnóstico e tratamento (BRASIL, 2019).

A sífilis congênita é uma doença grave causada pela disseminação hematogênica da bactéria *Treponema pallidum* da gestante para o seu feto, por via transplacentária ou intraparto (BRASIL, 2019; MAGALHÃES *et al*., 2011; SES-SP, 2016). A transmissão pelo aleitamento materno é possível somente se houver lesão mamária por sífilis (SES-SP, 2016).

A transmissão pode ocorrer em qualquer período da gestação e em qualquer estágio da doença materna (BRASIL, 2019; SES-SP, 2016). As fases mais infectantes são a primária e secundária, com risco de transmissão vertical de 70-100%, essa taxa é de 30% nas fases tardias da infecção materna (BRASIL, 2020a). Com o tratamento adequado, esse risco de transmissão vertical de 70-100% cai para 1-2% (BRASIL, 2020a; SES-SP, 2016). Dessa forma, ao contrário de muitas infecções neonatais, a sífilis congênita pode ser realmente evitada com o diagnóstico e tratamento adequado de mulheres grávidas infectadas e seus parceiros sexuais (OMS, 2008).

Embora tenha agente etiológico conhecido, modo de transmissão estabelecido e tratamento fácil, barato e eficaz, a sífilis gestacional e congênita são graves problemas de saúde pública, sendo responsáveis por altos índices de morbimortalidade fetal e neonatal no Brasil e no mundo (BRASIL, 2020a).

O número de casos de sífilis gestacional no mundo em 2016 era de, aproximadamente, 988.000 casos (taxa de detecção: 473/100.000 nascidos vivos) (KORENROMP *et al*., 2019). Em relação a sífilis congênita, o número estimado de casos era de 661.000

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casos no mesmo ano, com mais de 200.000 mortes fetais ou neonatais. (KORENROMP *et al*., 2019).

No Brasil, em 2019, o número total de casos de sífilis gestacional foi de 61.127 (taxa de detecção: 20,8/1000 nascidos vivos), (BRASIL, 2020b). Nesse mesmo ano, foram notificados 24.130 casos de sífilis congênita (taxa de incidência: 8,2/1.000 nascidos vivos), resultando em 173 óbitos (taxa de mortalidade: 5,9/100.000 nascidos vivos) (BRASIL, 2020b).

Na Região Norte, em 2019, o número total de casos notificados de sífilis gestacional foi de 6.026 (taxa de detecção: 18,9/1000 nascidos vivos), valor que representa 9,9% do total de casos do Brasil, (BRASIL, 2020b). No mesmo ano, notificaram 2.219 casos de sífilis congênita, (taxa de incidência: 7,0/1.000 nascidos vivos), e a taxa de mortalidade foi de 5,6/1000 nascidos vivos (BRASIL, 2020b).

No Pará, 2.218 casos de sífilis gestacional foram registrados em 2019 (taxa de detecção: 15,6/1000 nascidos vivos). No mesmo período, houve 944 casos de sífilis congênita (taxa de incidência: 6,7/1.000 nascidos vivos), resultando em uma taxa de mortalidade de 4,9/1000 nascidos vivos (BRASIL, 2020b).

Nesse contexto, a sífilis gestacional e congênita são agravos que apresentaram crescimento expressivo a partir do ano de 2009 na Região do Xingu (SILVEIRA, 2016). Artigos estabeleceram uma relação de causalidade entre essa alteração na epidemiologia e a construção da Usina Hidrelétrica (UHE) de Belo Monte nos municípios da Área de Influência Direta da usina de Belo Monte, especialmente no município de Altamira (GRISOTTI, 2016; SILVEIRA, 2016).

O município de Altamira é a sede administrativa da Região Xingu, e centro de referência em atendimentos de saúde para os nove municípios da Região. Em Altamira, no ano de 2020, o número total de casos de sífilis gestacional foi de 50 casos (taxa de detecção: 21,3/1000 nascidos vivos). Nesse mesmo ano, foram notificados 32 casos de sífilis congênita (taxa de incidência: 13,6/ 1000 nascidos vivos (BRASIL, 2021).

A UHE Belo Monte, construída na bacia do Rio Xingu, é a terceira maior hidrelétrica do mundo e a maior usina hidrelétrica inteiramente brasileira (OLIVEIRA, 2013; SILVEIRA, 2016). O projeto da hidrelétrica surgiu na década de 1970, durante o regime militar, porém a sua construção se iniciou efetivamente apenas em 2011 (OLIVEIRA, 2013; SILVEIRA, 2016). Dessa maneira, atraídos pela possibilidade de emprego e aquisição de renda, houve um rápido e intenso deslocamento de contingente humano para região, acarretando inúmeras transformações socioeconômicas, demográficas e epidemiológicas (SILVEIRA, 2016).

Os processos migratórios apresentam importantes desafios para a saúde pública por aumentarem o risco de disseminação de doenças infecciosas, dos migrantes às comunidades receptores e vice-versa (DIAS e GONÇALVEZ, 2007; WILSON, 1995). Diante dessa perspectiva, o aumento no número de casos de sífilis gestacional e congênita na Região Xingu pode estar associado ao intenso fluxo migratório para a região em virtude do empreendimento (SILVEIRA, 2016).

A construção de uma barragem hidrelétrica é um grande projeto de desenvolvimento, que afeta as trajetórias de uma região, em curto e longo prazo (GRISOTTI, 2016; MORAN, 2016).

De modo geral, as localidades onde se instalam grandes hidrelétricas sofrem profundas transformações ambientais, demográficas e socioeconômicas (GRISOTTI, 2016; MORAN, 2016). No entanto, há poucos estudos em relação aos impactos à saúde decorrentes desse processo (GRISOTTI, 2016). Assim, mudanças como o aumento de doenças como a sífilis gestacional e sífilis congênita são negligenciadas devido à escassez de pesquisas que avaliem amplamente essas alterações (GRISOTTI, 2016).

Diante do impacto dessa problemática na saúde pública, é essencial realizar uma pesquisa abrangente sobre a epidemiologia da sífilis gestacional e congênita, no sentido de ampliar a informação da comunidade científica, profissionais de saúde atuantes e da população. Além de obter um banco de dados consistentes que permita a adoção de ações de prevenção e controle.

Então, pretende-se analisar a influência do intenso fluxo migratório decorrente da construção da Usina Hidrelétrica de Belo Monte sífilis congênita na Área de Influência Direta da Usina Hidrelétrica de Belo Monte no período de janeiro de 2007 a dezembro de 2019.

- Determinar o número de casos de sífilis congênita na Área de Influência Direta da Usina Hidrelétrica de Belo Monte no período de 2007 a 2019.
- Determinar o perfil clínico-epidemiológico das gestantes cujos filhos foram diagnosticados com sífilis congênita na Área de Influência Direta da Usina Hidrelétrica de Belo Monte no período de 2007 a 2019.
- Analisar o acompanhamento pré-natal das gestantes com sífilis gestacional na Área de Influência Direta da Usina Hidrelétrica de Belo Monte no período de 2007 a 2019.
- Analisar o tratamento materno adequado e o tratamento concomitante do parceiro das gestantes com sífilis gestacional na Área de Influência Direta da Usina Hidrelétrica de Belo Monte no período de 2007 a 2019.

II. Material e Métodos

Trata-se de um estudo ecológico, retrospectivo, de caráter analítico-descritivo.

O trabalho apresenta como área de estudo a Região Xingu, especificamente a Área de Influência Direta da Usina Hidrelétrica de Belo Monte.

A Região Xingu é dividida em Áreas de Influência Direta e Indireta, indicadas pelo Estudo de Impacto Ambiental (EIA) da UHE de Belo Monte, realizado pela empresa Eletrobrás.

A Área de Influência Direta (AID) é definida como a que pode sofrer com as interferências diretas da usina hidrelétrica, sendo composta pela área ocupada pela obra e pelo reservatório, bem como pela área em volta dessas localidades (ELETROBRÁS, 2009). Engloba 5 municípios: Altamira, Vitória do Xingu, Brasil Novo, Anapu e Senador José Porfírio (ELETROBRÁS, 2009; SILVEIRA, 2016).

A Área de Influência Indireta (AII) é definida como área mais distante, que pode sofrer modificações indiretas ocasionadas pelo empreendimento (ELETROBRÁS, 2009). É composta por outros 5 municípios: Placas, Uruará, Medicilândia, Pacajá e Porto de Moz (ELETROBRÁS, 2009; SILVEIRA, 2016).

A população da pesquisa compreende todos os casos notificados de sífilis congênita nos municípios que compõe a Área de Influência Direta da Usina Hidrelétrica de Belo Monte no período de 2007 a 2019.

De acordo com o exigido pelas diretrizes e normas regulamentadoras de pesquisa envolvendo seres humanos, previstos na Resolução número 466 de 2012, o projeto de pesquisa foi submetido à aprovação pelo Comitê de Ética em Pesquisa (CEP) do Instituto de Ciências da Saúde da Universidade Federal do Pará no dia 21/01/2021. O projeto foi aprovado pelo CEP, com parecer de número: 42343121.9.0000.0018.

Não houve a necessidade da utilização do Termo de Consentimento Livre e Esclarecido, pois ao longo da pesquisa, a identidade dos indivíduos foi mantida em sigilo.

Os pesquisadores envolvidos no projeto assinaram o Termo de Confidencialidade e Sigilo, seguindo assim, os princípios estabelecidos pela Resolução n° 466 do Conselho Nacional de Saúde.

Os dados foram obtidos do Sistema de Informação de Agravos de Notificação (SINAN) da Região Xingu, coletados na Secretária de Estado de Saúde Pública do Pará (SESPA). O SINAN contém informações provenientes das fichas de notificação de e de sífilis congênita, que estão em anexo A.

Critérios de Inclusão: todos os casos de sífilis gestacional e congênita notificados nos munícipios que compõe a Área de Influência Direta da Usina Hidrelétrica de Belo Monte no período de 2007 a 2019 foram incluídos na pesquisa.

Critérios de Exclusão: não houve exclusão de fichas, sendo analisadas, inclusive, as fichas contendo alguns dados não informados ou referidos como ignorados.

No que se refere aos dados de sífilis gestacional, foi calculado o número total de casos notificados no período analisado, e a taxa de incidência para cada ano e para cada município. A taxa de incidência foi calculada dividindo o número total de casos novos de sífilis gestacional em cada ano e para cada município pelo número de nascidos vivos no mesmo local e período, e multiplicado por 1000. O número de nascidos vivos foi obtido no Sistema de Informações sobre nascidos vivos (SINASC).

As variáveis sociodemográficas avaliadas foram: munícipio de residência, faixa etária, etnia, escolaridade e zona de moradia. Foram avaliadas também a seguintes características clínicas: trimestre de gestação, classificação clínica da sífilis, VDRL e FTA-Abs no pré-natal, esquema de tratamento da gestante e tratamento concomitante do parceiro.

Com relação a sífilis congênita, foi calculado o número total de casos notificados no período analisado, e a taxa de incidência para cada ano e para cada município. A taxa de incidência foi calculada dividindo o número total de casos novos de sífilis congênita em cada ano e para cada município pelo número de nascidos vivos no mesmo local e período, e multiplicado por 1000.

Foram avaliados também os antecedentes clínico-epidemiológicos das mães cujos recém-nascidos foram diagnosticados com sífilis congênita: realização do pré-natal, faixa etária, etnia, escolaridade, momento do diagnóstico, esquema de tratamento, adequação do tratamento e tratamento concomitante do parceiro.

Para a descrição do perfil epidemiológico, foram realizadas análises estatísticas descritivas. O programa utilizado para a organização dos dados em tabelas e gráficos foi o software *Microsoft Office Excel* versão 2010.

O programa estatístico utilizado para a realização das análises foi o BioEstat 5.2. Os testes de hipótese Qui-quadrado de Pearson e Teste G de Aderência foram utilizados para verificar associação estatística entre as variáveis.

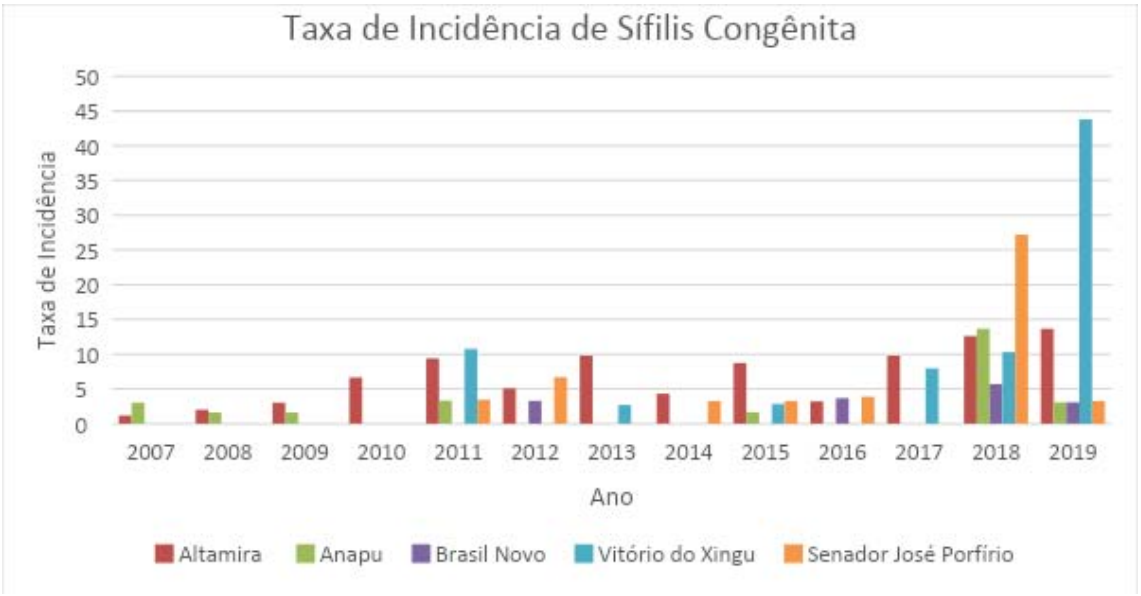
O teste de Risco Relativo foi utilizado para verificar se houve aumento relativo do risco de desenvolver sífilis gestacional e sífilis congênita no período antes, durante e após a construção da Usina Hidrelétrica de Belo Monte. Para essa análise, foram considerados os anos de 2007 a 2010 como período anterior a construção, o período de 2011 a 2014 como período durante a construção, e os anos de 2015 a 2018 como período posterior. O ano de 2019 foi desconsiderado para essa análise estatísticas para que todas as fases possuíssem 4 anos. Para cada período, utilizou-se como eventos a soma da taxa de incidência

dos 4 anos considerados, e como tamanho da amostra, foi considerado o número de 1000 nascidos vivos.

Para todas as análises estatísticas realizadas foi considerado como indicativo de diferença estatística significante um valor de $p \leq 0,05$.

III. Resultados

Foram notificados 294 casos de sífilis congênita no período de 2007 a 2019 na Área de Influência Direta da Usina Hidrelétrica de Belo Monte. Dessa maneira, a taxa de transmissão vertical de sífilis na Região Xingu é de 46,88%. Analisando a amostra, nota-se que houve um aumento do número de casos de 2009 até 2011. Entre os anos 2011 e 2016 houve variação da taxa de incidência, e a partir de 2016 houve novamente um aumento substancial do número de casos da doença. O gráfico 1 mostra a distribuição de casos de sífilis congênita para cada ano e para cada município.

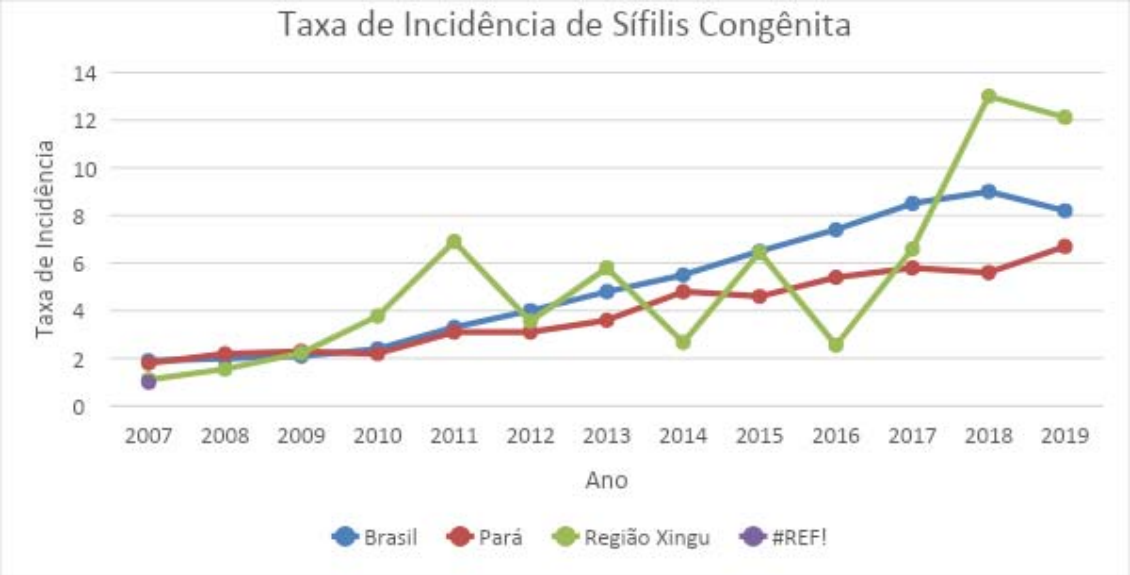


Fonte: Elaborado pelo autor (2021)

Gráfico 1: Taxa de Incidência de Congênita na Área de Influência Direta da UHE de Belo Monte de 2007 a 2019

O teste do Risco Relativo demonstrou que houve aumento relativo do risco de 186% de sífilis congênita na Região Xingu quando comparado o período antes e durante a construção da UHE de Belo monte (RR: 2,86, p: 0,01), e esse aumento relativo do risco foi de 314% quando comparado o período anterior com o período posterior a construção do empreendimento (RR: 4,14, p: 0,0002).

Em relação a análise comparativa da taxa de incidência de sífilis congênita na Região Xingu com a taxa de incidência nacional e estadual, constatou-se, por meio do Teste G de Aderência, que não houve diferença estatística significativa com o Brasil (Teste G de Aderência: 19,43, com $p < 0,078$). Já em comparação com o estado do Pará, houve diferença estatística significativa (Teste G de Aderência: 52,84, com $p < 0,0001$). O gráfico 2 demonstra as taxas de incidência de sífilis congênita do Brasil, do estado do Pará e da Região Xingu.



Fonte: Elaborado pelo autor (2021)

Gráfico 2: Comparação das taxas de Incidência de Sífilis Congênita de 2007 a 2019

Quanto ao perfil clínico-epidemiológico das gestantes com sífilis cujos filhos foram diagnosticados com sífilis congênita, as gestantes mais acometidas estavam na faixa etária de 16-20 anos (37,41%), eram pardas (91,49%) e possuíam ensino fundamental incompleto (37,41%). Quanto ao nível de escolaridade, é importante pontuar que 18,36% das fichas de notificação apresentaram esse dado como ignorado. A tabela 1 apresenta dados clínico-epidemiológicos das mães de recém-nascidos com sífilis congênita na Área de Influência Direta da UHE de Belo Monte.

Tabela 1: Dados Clínico-epidemiológicos das mães de recém-nascidos com sífilis congênita na Área de Influência Direta da UHE de Belo Monte de 2007 a 2019

Dados Clínico-epidemiológicos da mãe	Números absolutos (%)
Faixa etária	
≤ 15	21 (6,86%)
16-20	110 (37,41%)
21-25	74 (24,18%)
26-30	50 (17%)
31-35	23 (7,82%)
> 35	16 (5,44%)
Etnia	
Branca	14 (4,76%)
Preta	4 (1,36%)
Amarela	1 (0,34%)
Parda	269 (91,49%)
Indígena	2 (0,68%)
Ignorado	4 (1,36%)
Escolaridade	
Analfabeto	3 (1,02%)
Ensino fundamental incompleto	110 (37,41%)
Ensino fundamental completo	25 (8,50%)
Ensino médio incompleto	55 (18,70%)
Ensino médio completo	40 (13,60%)
Ensino superior	7 (2,38%)
Ignorado	54 (18,36%)
Mãe realizou o pré-natal	
Sim	262 (89,11%)
Não	27 (9,18%)
Ignorado	5 (1,70%)

Diagnóstico de Sífilis Materna	
Durante o pré-natal	151 (51,36%)
No momento do parto	29 (9,86%)
Após o parto	104 (35,37%)
Ignorado	10 (3,40%)
Esquema de tratamento da gestante	
Adequado	61 (20,74%)
Inadequado	182 (61,90%)
Não realizado	42 (14,28%)
Ignorado	9 (3,06%)
Parceiro tratado concomitantemente	
Sim	92 (31,29%)
Não	182 (61,90%)
Ignorado	20 (6,80%)

Fonte: Elaborado pelo autor (2021)

Em relação à assistência pré-natal, observa-se que 89,11% das gestantes realizaram o pré-natal. Quanto ao momento de diagnóstico da sífilis materna, 51,36% dos casos foram diagnosticados durante o acompanhamento pré-natal, 9,86% dos casos foram descobertos no momento do parto, e 35,37% após o parto.

A maioria das mães dos recém-nascidos diagnosticados com sífilis congênita receberam tratamento inadequado (61,90%). Em relação ao tratamento da sífilis pelo parceiro da gestante, notou-se que 61,90% dos parceiros sexuais das gestantes não foram tratados concomitantemente.

IV. Discussão

Foram diagnosticados e notificados 294 casos de sífilis congênita nos municípios da Área de Influência Direta da Usina Hidrelétrica de Belo monte entre 2007 e 2019. O teste do Risco Relativo demonstrou que houve aumento relativo do risco de desenvolver sífilis congênita na Região Xingu de 314% quando comparado o período anterior com o período posterior a construção da Usina Hidrelétrica de Belo Monte (RR: 4,14, p: 0,0002). Resultado semelhante foi observado em um trabalho realizado no município sede da implantação da Usina Hidrelétrica Foz do Chapecó, que demonstrou aumento de 389,6% no número de casos de infecções sexualmente transmissíveis, entre elas, a sífilis congênita, no período antes e após a construção do empreendimento (BEZ et al., 2019). Essa correlação indica uma ligação entre esses grandes projetos de infraestrutura e o aumento de agravos a saúde da população. Todavia, comparações com outras cidades e ou regiões com populações semelhantes na formação e composição podem trazer novas revelações sobre esse processo.

Com relação ao perfil sociodemográfico das gestantes infectadas cujos filhos foram acometidos por sífilis congênita, a maioria estava na faixa etária de 16-20 anos (37,41%), eram pardas (91,49%) e possuíam ensino fundamental incompleto (37,41%). Quanto ao nível de escolaridade, é importante pontuar que 18,36% das fichas de notificação apresentaram esse dado como ignorado. Dessa maneira, não houve diferença entre o perfil sociodemográfico das gestantes com sífilis gestacional das gestantes com sífilis gestacional cujos filhos foram diagnosticados com sífilis congênita de acordo os dados publicados por Loureiro *et al*., 2022. Esses dados chamam atenção para o maior risco de mulheres jovens (menores de 20 anos) e com baixa escolaridade estão expostas a ISTs.

O estudo demonstrou que 89,11% das mulheres que tiveram seus recém-nascidos diagnosticados com sífilis congênita receberam assistência pré-natal. Resultados semelhantes foram encontrados em outros estudos realizados em diferentes regiões do Brasil (CAVALCANTE et al., 2017; MASCHIO-LIMA et al., 2019; SILVA et al., 2020). Diante disso, questiona-se a qualidade das consultas de pré-natal ofertadas, já que essas mulheres tiveram acesso ao serviço de saúde em algum momento da gravidez e mesmo assim ocorreu transmissão vertical, onde o manejo adequado deveria reduzir o risco de sífilis congênita para 2%.

Segundo um estudo do IBGE em parceria com o Ministério da Saúde e a Fundação Instituto Oswaldo Cruz realizado com mulheres de todo o território nacional, cerca de 97,4% das mulheres do Brasil tem acesso ao pré-natal (NUNES *et al*., 2017). No entanto, esse estudo revelou a baixa qualidade da assistência prestada no Norte do país, que apresentou menor taxa de início precoce do pré-natal, menor número de consultas e menor proporção de realização de exames complementares preconizados durante a gestação (NUNES *et al*., 2017). Nesse contexto, a ausência de assistência pré-natal ou assistência pré-natal incompleta ou incorreta impede o diagnóstico precoce e o tratamento adequado de sífilis gestacional, limitando as possibilidades de redução de transmissão vertical (BRASIL, 2019).

Quanto ao momento de diagnóstico da sífilis materna, apenas 51,36% das mulheres foram diagnosticadas durante o acompanhamento pré-natal, o que revele novamente deficiência na qualidade do serviço de saúde ofertado, já que 89,11% dessas mulheres receberam assistência pré-natal. Além disso,

o estudo demonstrou que 9,86% dos casos foram descobertos no momento do parto, e 35,37% após o parto. O diagnóstico tardio da doença na gestante reduz o tempo hábil para a conclusão do tratamento e, portanto, aumenta o risco de transmissão vertical (SOUZA *et al*., 2018).

A maioria das mães dos recém-nascidos diagnosticados com sífilis congênita receberam tratamento inadequado (61,90%). O tratamento é considerado inadequado quando se utiliza outra droga que não seja a penicilina ou se utiliza penicilina em dose inadequada para o estágio da doença, quando é realizado com menos de 30 dias antes do parto, quando não há a avaliação sobre o risco de reinfecção, o que inclui o não tratamento do parceiro, e quando não se observa a queda dos títulos de VDRL após o tratamento (BRASIL, 2019). Outros estudos também evidenciaram essa alta taxa de tratamento inadequado de sífilis gestacional nos estados da Paraíba, Rio Grande do Norte, Tocantins, São Paulo e Paraná (ALCÂNTARA *et al*., 2017; HOLANDA *et al*., 2011; MASCHIO-LIMA *et al*., 2019; SILVA *et al*., 2020).

Outro dado preocupante encontrado na pesquisa foi que 61,90% dos parceiros sexuais das gestantes não realizaram o tratamento. Outros estudos realizados no Brasil também apresentaram alto percentual de parceiros não tratados (ALCÂNTARA *et al*., 2017; CAVALCANTE *et al.* 2017; HOLANDA *et al*., 2011; MASCHIO-LIMA *et al*., 2019; SILVA *et al*., 2020; SOUZA *et al*., 2018). A terapia do parceiro é imprescindível para o sucesso do tratamento da gestante com sífilis, pois a ausência do tratamento concomitante do parceiro representa um risco de reinfecção para parturiente e, consequentemente aumenta o risco de transmissão vertical (BRASIL, 2019).

A sífilis congênita ocorre em 70% a 100% das gestantes não tratadas, ou tratadas inadequadamente, em comparação com apenas 1% a 2% das mulheres adequadamente tratadas (BRASIL, 2020a). Estima-se que, na ausência de tratamento eficaz, 11% das gestações resultarão em morte fetal e 13% em partos prematuros ou baixo peso ao nascer, portanto, a sífilis congênita é uma patologia grave, mas que pode ser evitada por meio do diagnóstico precoce e tratamento adequado das gestantes com sífilis e seus parceiros sexuais (BRASIL, 2020a; OMS, 2008; WHO, 2016). Diante dessa perspectiva, é fundamental melhorar a qualidade da assistência pré-natal ofertada na Região Xingu para reduzir a transmissão vertical da doença.

V. Conclusão

- ✓ Houve influência da construção da Usina Hidrelétrica de Belo Monte no número de casos de sífilis gestacional e sífilis congênita nos municípios da Região Xingu que compõe a Área de Influência Direta da UHE Belo Monte.
- ✓ Foram notificados 294 casos de sífilis congênita no período de 2007 a 2019 nos municípios da Região Xingu que compõe a Área de Influência Direta da UHE Belo Monte.
- ✓ O perfil clínico-epidemiológico das gestantes cujos filhos foram diagnosticados com sífilis congênita na Região Xingu foi semelhante ao encontrado para as gestantes portadoras de sífilis gestacional.
- ✓ O estudo revelou inúmeras falhas na assistência pré-natal prestada na Região Xingu, como diagnóstico tardio, incompatibilidade entre a classificação clínica da doença e o esquema terapêutico adotado e as altas taxas de tratamento considerado inadequado. Todos esses erros se refletem na alta taxa de transmissão vertical de sífilis na região.
- ✓ A análise do perfil sociodemográfico apresentado representa importante instrumento para o desenvolvimento de estratégias e ações em saúde voltadas para a prevenção de agravos como a sífilis gestacional e a sífilis congênita alinhadas à realidade territorial. Além disso, o registro da qualidade da assistência em saúde prestada constitui efetivo subsídio para permitir a elaboração de políticas públicas que melhorem a qualidade dos serviços em saúde, e assim, reverter o quadro epidemiológico de sífilis gestacional e congênita observado na Região Xingu.

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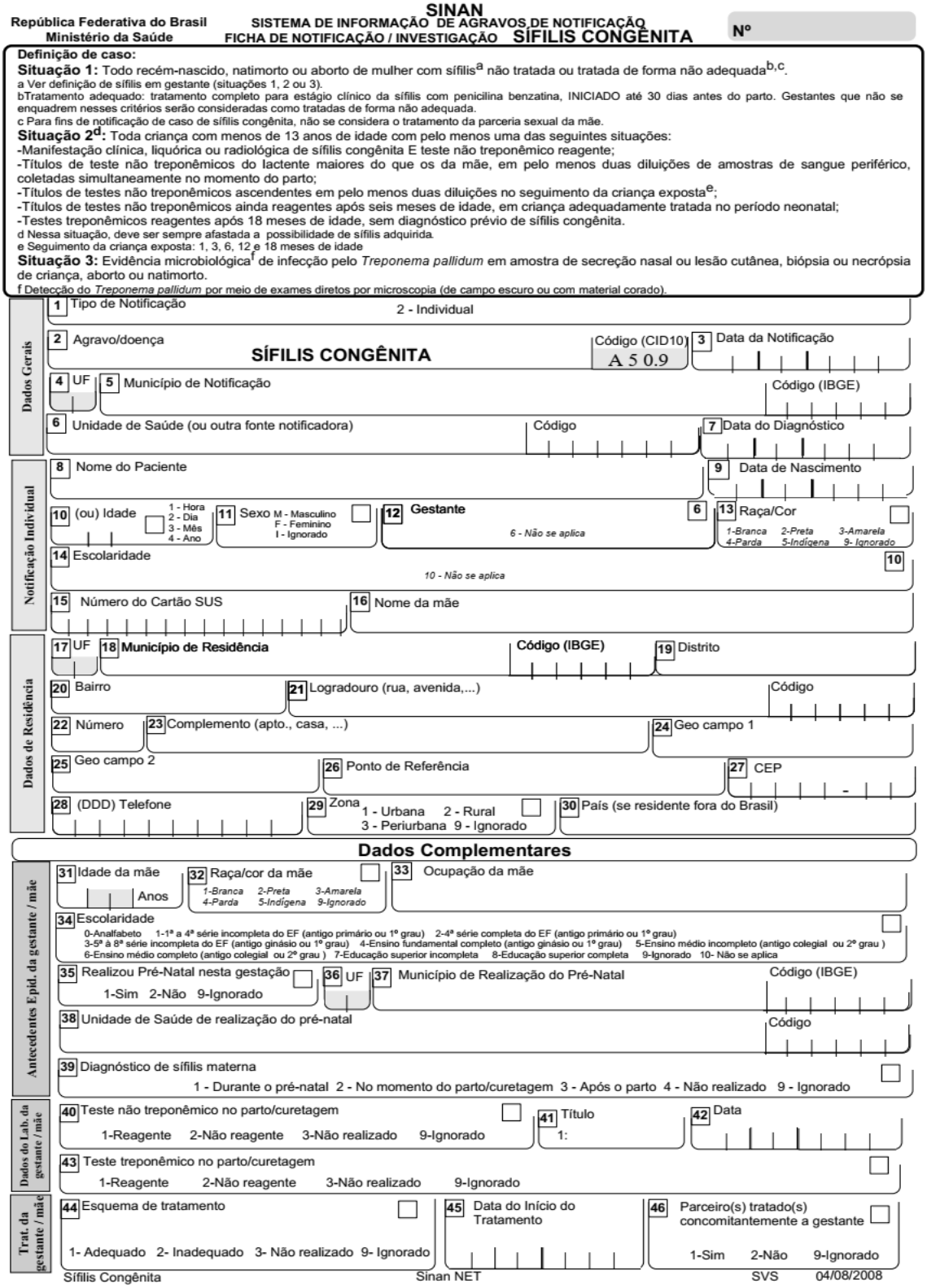
27. ANEXO A – Ficha de Notificação da Sífilis Congênita do Sistema de Informação de Agravos de Notificação (SINAN)

Annex A



SINAN

República Federativa do Brasil
Ministério da Saúde

SISTEMA DE INFORMAÇÃO DE AGRAVOS DE NOTIFICAÇÃO
FICHA DE NOTIFICAÇÃO / INVESTIGAÇÃO **SÍFILIS CONGÊNITA**

Nº

Definição de caso:

Situação 1: Todo recém-nascido, natimorto ou aborto de mulher com sífilis[a] não tratada ou tratada de forma não adequada[b,c].

a Ver definição de sífilis em gestante (situações 1, 2 ou 3).
bTratamento adequado: tratamento completo para estágio clínico da sífilis com penicilina benzatina, INICIADO até 30 dias antes do parto. Gestantes que não se enquadrem nesses critérios serão consideradas como tratadas de forma não adequada.
c Para fins de notificação de caso de sífilis congênita, não se considera o tratamento da parceria sexual da mãe.

Situação 2[d]: Toda criança com menos de 13 anos de idade com pelo menos uma das seguintes situações:
-Manifestação clínica, liquórica ou radiológica de sífilis congênita E teste não treponêmico reagente;
-Títulos de teste não treponêmicos do lactente maiores do que os da mãe, em pelo menos duas diluições de amostras de sangue periférico, coletadas simultaneamente no momento do parto;
-Títulos de testes não treponêmicos ascendentes em pelo menos duas diluições no seguimento da criança exposta[e];
-Títulos de testes não treponêmicos ainda reagentes após seis meses de idade, em criança adequadamente tratada no período neonatal;
-Testes treponêmicos reagentes após 18 meses de idade, sem diagnóstico prévio de sífilis congênita.
d Nessa situação, deve ser sempre afastada a possibilidade de sífilis adquirida.
e Seguimento da criança exposta: 1, 3, 6, 12 e 18 meses de idade

Situação 3: Evidência microbiológica[f] de infecção pelo *Treponema pallidum* em amostra de secreção nasal ou lesão cutânea, biópsia ou necrópsia de criança, aborto ou natimorto.
f Detecção do *Treponema pallidum* por meio de exames diretos por microscopia (de campo escuro ou com material corado).

Dados Gerais
1 Tipo de Notificação — 2 - Individual
2 Agravo/doença — SÍFILIS CONGÊNITA — Código (CID10) A 5 0.9
3 Data da Notificação
4 UF
5 Município de Notificação — Código (IBGE)
6 Unidade de Saúde (ou outra fonte notificadora) — Código
7 Data do Diagnóstico

Notificação Individual
8 Nome do Paciente
9 Data de Nascimento
10 (ou) Idade — 1 - Hora 2 - Dia 3 - Mês 4 - Ano
11 Sexo — M - Masculino F - Feminino I - Ignorado
12 Gestante — 6 - Não se aplica
13 Raça/Cor — 1-Branca 2-Preta 3-Amarela 4-Parda 5-Indígena 9- Ignorado
14 Escolaridade — 10 - Não se aplica
15 Número do Cartão SUS
16 Nome da mãe

Dados de Residência
17 UF
18 **Município de Residência** — **Código (IBGE)**
19 Distrito
20 Bairro
21 Logradouro (rua, avenida,...) — Código
22 Número
23 Complemento (apto., casa, ...)
24 Geo campo 1
25 Geo campo 2
26 Ponto de Referência
27 CEP
28 (DDD) Telefone
29 Zona — 1 - Urbana 2 - Rural 3 - Periurbana 9 - Ignorado
30 País (se residente fora do Brasil)

Dados Complementares

Antecedentes Epid. da gestante / mãe
31 Idade da mãe — Anos
32 Raça/cor da mãe — 1-Branca 2-Preta 3-Amarela 4-Parda 5-Indígena 9-Ignorado
33 Ocupação da mãe
34 Escolaridade — 0-Analfabeto 1-1ª a 4ª série incompleta do EF (antigo primário ou 1º grau) 2-4ª série completa do EF (antigo primário ou 1º grau) 3-5ª à 8ª série incompleta do EF (antigo ginásio ou 1º grau) 4-Ensino fundamental completo (antigo ginásio ou 1º grau) 5-Ensino médio incompleto (antigo colegial ou 2º grau) 6-Ensino médio completo (antigo colegial ou 2º grau) 7-Educação superior incompleta 8-Educação superior completa 9-Ignorado 10- Não se aplica
35 Realizou Pré-Natal nesta gestação — 1-Sim 2-Não 9-Ignorado
36 UF
37 Município de Realização do Pré-Natal — Código (IBGE)
38 Unidade de Saúde de realização do pré-natal — Código
39 Diagnóstico de sífilis materna — 1 - Durante o pré-natal 2 - No momento do parto/curetagem 3 - Após o parto 4 - Não realizado 9 - Ignorado

Dados do Lab. da gestante / mãe
40 Teste não treponêmico no parto/curetagem — 1-Reagente 2-Não reagente 3-Não realizado 9-Ignorado
41 Título — 1:
42 Data
43 Teste treponêmico no parto/curetagem — 1-Reagente 2-Não reagente 3-Não realizado 9-Ignorado

Trat. da gestante / mãe
44 Esquema de tratamento — 1- Adequado 2- Inadequado 3- Não realizado 9- Ignorado
45 Data do Início do Tratamento
46 Parceiro(s) tratado(s) concomitantemente a gestante — 1-Sim 2-Não 9-Ignorado

Sífilis Congênita — Sinan NET — SVS — 04/08/2008

Fonte: SVS/MS

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Miliary Tuberculosis in Pregnancy in the Post Covid Phase- A Case Report

By Anu Anna George & Mini Isac

Abstract- Miliary tuberculosis is usually seen in pregnant women with a compromised immune system. Recent studies have speculated a plausible immune dysregulation for several months following a COVID-19 infection. We report the case of a pregnant women who had COVID infection in the first trimester and miliary tuberculosis with ARDS in the third trimester. We presume that the onset of tuberculosis as disseminated disease could be due to a weakened immune system following COVID-19 infection and we hope that this case could shed some light on the risk for infections during the post – covid phase in pregnancy.

Keywords: *COVID-19, tuberculosis, pregnancy.*

GJMR-E Classification: *NLMC Code: WF 200*

Strictly as per the compliance and regulations of:

Miliary Tuberculosis in Pregnancy in the Post Covid Phase– A Case Report

Tuberculosis in Pregnancy after COVID

Anu Anna George [α] & Mini Isac [σ]

Abstract- **Miliary tuberculosis is usually seen in pregnant women with a compromised immune system. Recent studies have speculated a plausible immune dysregulation for several months following a COVID-19 infection. We report the case of a pregnant women who had COVID infection in the first trimester and miliary tuberculosis with ARDS in the third trimester. We presume that the onset of tuberculosis as disseminated disease could be due to a weakened immune system following COVID-19 infection and we hope that this case could shed some light on the risk for infections during the post – covid phase in pregnancy.**

Keywords: COVID-19, tuberculosis, pregnancy.

I. Introduction

Before the COVID 19 pandemic, Tuberculosis(Tb) had been the most fatal infectious disease in the world for many years. In 2021, according to the *Global tuberculosis report 2022*, an estimated 10.6 million people contracted TB and 1.6 million died from TB. Miliary tuberculosis occurs more frequently in extremes of age and those with a weakened immune system with non-specific symptoms that may be obscure till later in the disease. Since December 2019 the SARS-CoV-2 virus spread worldwide causing significant global public health and economic problems(1). It creates varied clinical phenotypes ranging from asymptomatic to life-threatening respiratory disease in all ages

Hormonal changes during pregnancy, especially oestrogen and progesterone changes is said to inhibit the immune function of lymphocytes and reduce the resistance of the mother to infections(2). This case report aims at highlighting the possibility of a lingering immune dysregulation in the post covid phase that may increase the susceptibility to infectious diseases.

II. Case Report

A 40-year-old multipara, an unvaccinated healthcare worker of Indian origin working in a region non endemic to tuberculosis, developed mild covid symptoms at 8 weeks of pregnancy which was confirmed to be a SARS-CoV-2 infection by quantitative real time polymerase chain reaction from throat swab. She was managed at a primary care facility with oral Azithromycin following which she had no significant symptoms. By the time she completed 31 weeks of gestation she developed a low-grade fever with occasional cough without expectoration. Over 4 weeks, it progressed to intermittent high-grade fever associated with chills and rigors and she was treated with multiple antibiotics from various facilities and she got admitted in our hospital for evaluation of persistent fever.

On admission she continued to have intermittent high-grade fever as high as 104 °F with no symptoms of localizing value. She had PR of 130 and a BP of 160/100 mm hg with RR of 28. The routine blood tests results showed that her white blood cell count was 6.8 x 10^9/L with neutrophil ratio 77 %and lymphocyte ratio 16%,CRP was 60.8 mg/l and ESR was 85 mm/hr. Peripheral Smear revealed normocytic normochromic blood picture with relative neutrophilia. Work up for infective causes including RT-PCR for SARS-COV 2, sputum CBNAAT for Tb and Mantoux test were negative. Work up for an autoimmune / inflammatory disease was also unremarkable. Respiratory examination revealed scattered crepitations over all lung fields, so a shielded Xray was taken which showed only the normal changes in pregnancy (Fig1). Transthoracic echocardiography and abdominal ultrasound were insignificant and MRI whole body diffusion study was attempted but the patient could not tolerate supine position due to dyspnea. The patient was empirically started on broad spectrum antibiotics. However, she continued to have continuous fever spikes daily with worsening shortness of breath. Over 48 hours following admission she developed dyspnea on rest and her oxygen saturation dropped from 96% to 86% with increased oxygen requirement from 2L/min via nasal prongs to 6L/min via a simple face mask.

Considering the deterioration in her general condition, an informed decision to terminate the pregnancy was made as the patient was in her third trimester and had crossed 35 completed weeks. Induction and vaginal delivery were preferred over caesarean delivery due to concerns over delayed wound healing as an infective pathology was still among the differentials. She continued to be febrile and was started

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on oral misoprostol 25 mcg. After 2 doses she started having mild uterine contractions and labour was augmented with oxytocin. As the intensity of her contractions increased, she started desaturating, her saturation dropped to 20% which mandated an emergency intubation. Category I LSCS was performed and she delivered a 2.42kg baby with APGAR 6 at 1' requiring bag and mask ventilation. Her placenta had to be manually removed since it was focally adherent and was sent for histopathology. After termination of pregnancy, fever spikes that had persisted for over a month ceased.

She developed moderate adult respiratory distress syndrome (ARDS) and was put on mechanical ventilation, she had elevated plateau pressures and required high PEEP of 14 and 100 percent Fio2 to ventilate and maintain adequate oxygenation. She was initiated on volume control mode - low tidal volume ventilation. The patient was initiated on Methylprednisolone in view of worsening ARDS. Prone ventilation could not be done due to post op status and drains in situ. Post operative chest radiographs revealed infiltrates suggestive of miliary mottling (fig1). Fundoscopy showed fine punctuate choroid tubercules suggestive of TB retinal manifestations. Her IGRA was sent which came positive. Initial bronchoalveolar lavage (BAL) cultures and smear for acid fast bacilli were still negative. Bone marrow biopsy was also done but was negative for miliary TB.

On the third post operative day, she was initiated on anti-tubercular therapy with a combination of Rifampicin, Isoniazid, Pyrazinamide, Ethambutol and Pyridoxine. Repeat BAL smear for acid fast bacilli was positive after 48 hours of initiating antitubercular therapy. CBNAAT done on the same sample was positive for Mycobacterium tuberculosis and there was no evidence of Rifampicin resistance. But she developed mild drug induced liver injury and anti-tubercular therapy was modified. The baby was also initiated on Rifampicin, Isoniazid and Pyridoxine. Soon, infiltrates on chest radiograph started improving, oxygen requirement and PEEP reduced with improvement in peak pressures and plateau pressures. The patient continued to improve, tolerating pressure support ventilation and was extubated on post operative day 8. Regular antitubercular medications were restarted following normalization of liver function tests. She also developed thrombosis of deep veins of the calf, popliteal vein and superficial femoral vein which required therapeutic anticoagulation. CT thorax was done on post operative day 20 and it revealed diffuse distribution of miliary nodules in bilateral lung parenchyma with conglomeration of few nodules in the left apico-posterior segment (fig 2).

The placental biopsy showed early crowding of the vessels with congestion of the villi, focal villous agglutination and intramural fibrin deposition within wall of large foetal vessel with calcification. There was also increased focal perivillous fibrin deposition occupying more than 25 % of the total parenchyma, intervillous thrombi, along with acute villitis and intervillositis with neutrophilic abscess and necrosis, but there were no bacilli on Ziehl-Neelsen stain.

She was discharged after 31 days of hospital stay and resumed activities of daily living. She is under close follow up on an outpatient basis and is afebrile without limitation of ordinary physical activity.

III. Discussion

The change from a cell mediated immunity to a humoral immunity along with the Th2 bias seen in pregnancy affects the systemic immune responses to infection and increases vulnerability to coronaviruses and Mycobacterium Tuberculosis(3). There has also been speculations that SARS-CoV-2 infection may increase the propensity for an active Tb infection(4). Moreover following a COVID-19 infection it is now speculated that one-fifth of patients have long term persistence of symptoms despite the apparent clearance of infection which has been hypothesized to be due to persistence of virus or alterations in humoral immunity(5).

In this case we have a woman in her third trimester without a history of prior Tb infection developing miliary tuberculosis that rapidly progressed to ARDS which is a rare fatal presentation of military Tb(6). During pregnancy the diagnosis of Tb can be a challenge as symptoms maybe masked by the pregnancy symptoms and also due to limited imaging(7). Her initial tests for tuberculosis were negative except a positive IGRA. It was the presence of choroid tubercles seen on the fundus that helped clinch the diagnosis of miliary Tb(8), then again she had a negative bone marrow biopsy report.

The two most intriguing factors in this case were the rapid resolution of her febrile episodes soon after the caesarean and the pathology of the placenta. The placenta showed features of maternal and fetal vascular malperfusion with increased focal perivillous fibrin deposition and additionally acute villitis and intervillositis with neutrophilic abscess and necrosis These features are suggestive of a covid placentitis as studies on SARS-CoV-2 infected placentas have shown increased rates of maternal vascular malperfusion features and intervillous thrombi, suggesting an abnormal materno-fetal circulation(9). Though miliary tuberculosis can cause changes in the placenta with a cluster of acute villitis and intervillitis, an abundance of acid-fast mycobacteria has been reported(10) which was absent in our case.

The persistence of placental changes due to a mild COVID-19 infection could be an indicator of a persistence of other systemic changes following the

infection. Further studies to explore this concept would help in determining the vulnerability of pregnant women to infectious diseases which would help in timely diagnosis and treatment to prevent the incidence of morbidity and mortality from these diseases in the post pandemic era.

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Conflict of Interest

The authors declare that they have nothing to disclose

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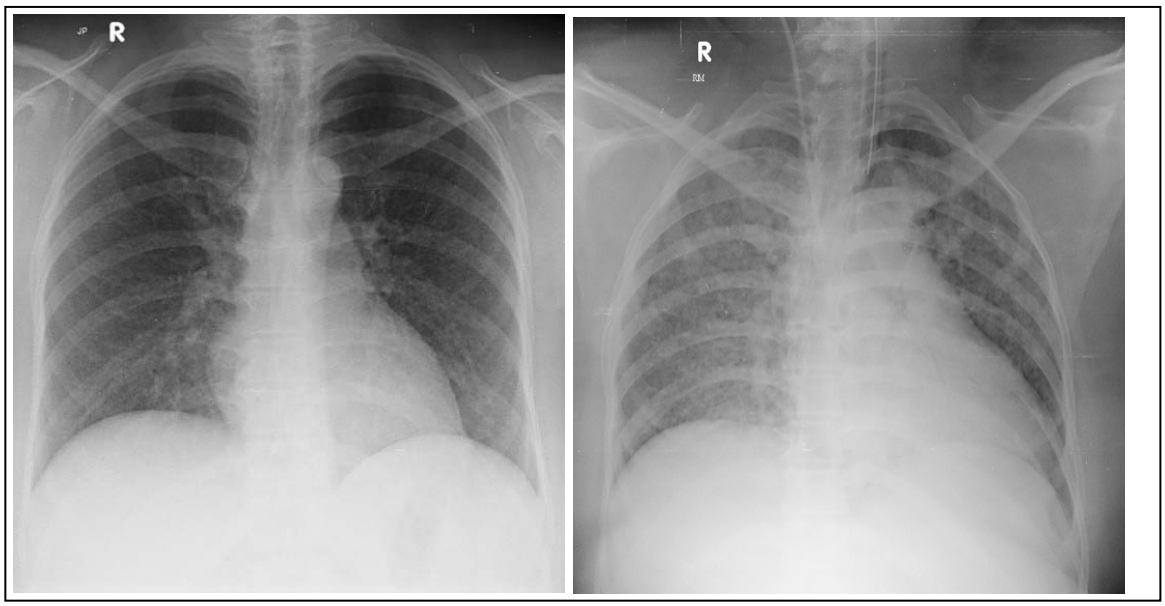

Figure 1: Left. Normal Chest X-ray at the time of admission to our hospital and Right. Image shows Chest X-ray with miliary mottling taken post operatively

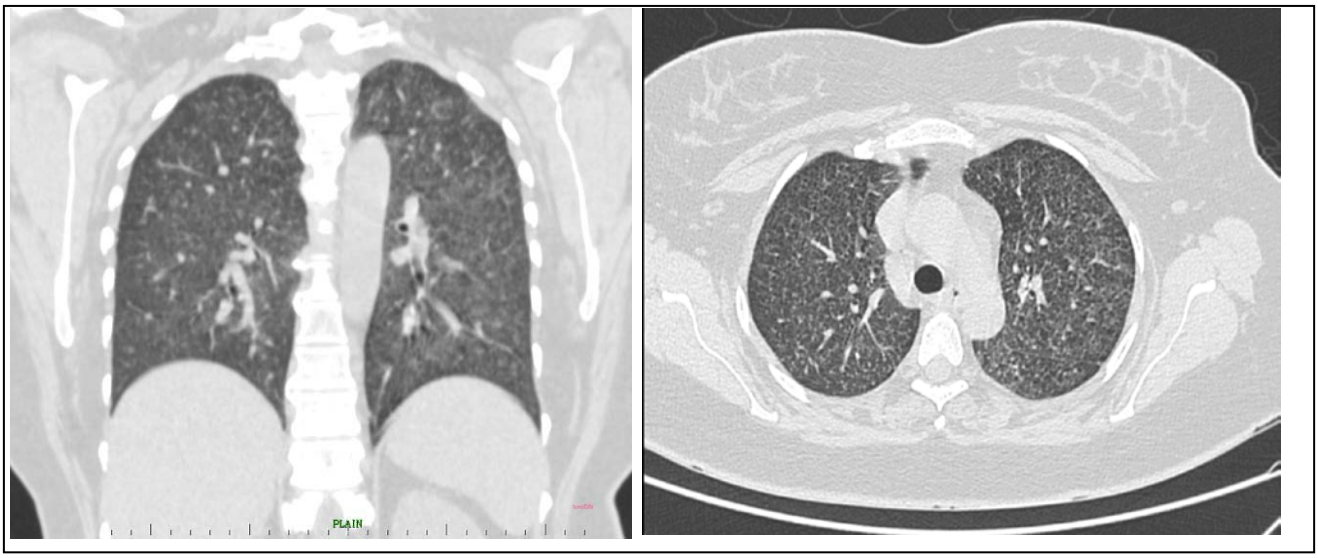

Figure 2: CT thorax showing miliary nodules taken on the 20th post operative day

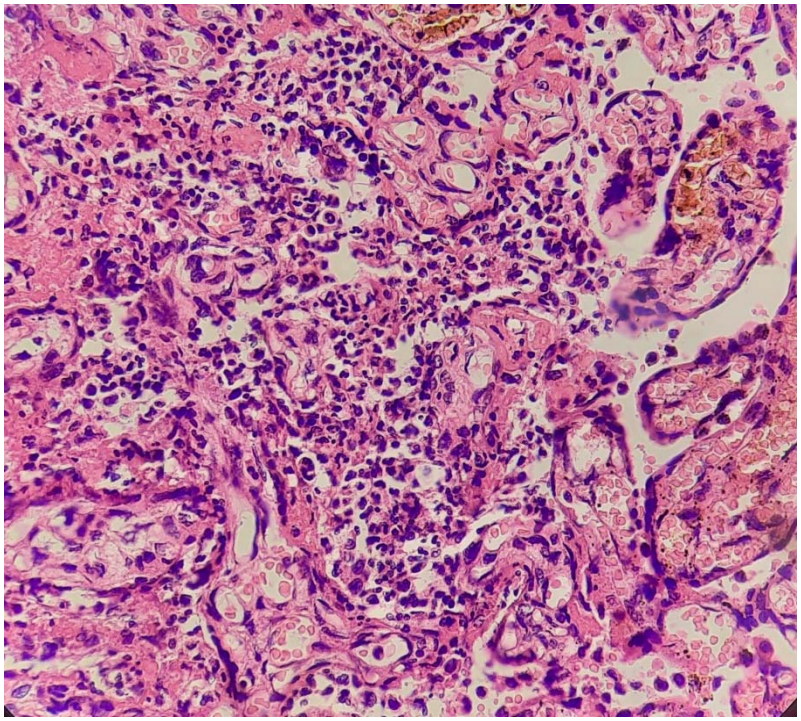

Figure 3: Histopathology of the placenta showing acute villitis and intervillositis

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Retrospective Review of Outcomes in Patients with Endometriosis and Colonic Segmental Resection (CSR) or Low Anterior Resection (LAR)

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Abstract- *Objective:* To further the understanding of long-term outcomes of endometriosis patients requiring colonic segmental resection (CSR) or low anterior resection (LAR). To improve counseling of patients with bowel endometriosis.

Methods: Retrospective chart review at a single academic institution between 2000-2018 with 3-year follow-up of patients with CSR/LAR for endometriosis.

21 patients aged 18-45 at single academic institution between 1/1/2000 and 12/31/2018 with ICD9&10 codes of endometriosis AND CSR/LAR were included; 9 met criteria for endometriosis as indication for CSR/LAR were reviewed.

Results: Pre- and post-operative symptoms were categorized into GI (hematochezia, dyschezia, tenesmus, incontinence, incomplete evacuation of bowel, and pre-operative colonoscopy), GYN (dysmenorrhea, dyspareunia, pelvic pain, and infertility), and GU (dysuria, frequency, urgency, incontinence, and incomplete emptying).

GJMR-E Classification: *UDC: 618*

Strictly as per the compliance and regulations of:

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Linda Li, MD, FACOG [α], Sonia Hafiz, BA [σ], Christy Stetter, BS [ρ] & Kristin Riley, MD, FACOG [ω]

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Pre-operatively, GI symptoms: 33.33% endorsed hematochezia and underwent a colonoscopy, 77.78% dyschezia, and 11.11% fecal incontinence. GYN: 77.78% endorsed dysmenorrhea, 55.56% dyspareunia, 100% pelvic pain. GU: 11.11% endorsed urinary incontinence.

Intraoperatively, 100% underwent anastomosis, 33.33% concurrent hysterectomy and 66.67% oophorectomy. Average operative time was 165.8 minutes. Median EBL 50cc. Median days spent inpatient 3.

Post-operatively, 1 patient underwent a reoperation for GYN excision of endometriosis in the 3 year follow up.

There was 88.89% decrease in pelvic pain and complete resolution of all other pre-operative symptoms of hematochezia, dyschezia, fecal incontinence, dysmenorrhea, dyspareunia and urinary incontinence.

Discussion: We found a clinically significant reduction in symptoms of hematochezia, dyschezia, fecal incontinence, dysmenorrhea, pelvic pain, dyspareunia and urinary incontinence in patients who underwent bowel resection for the indication of endometriosis. In all patients who had hematochezia and underwent a colonoscopy with positive findings of lesions or masses, the pathology also returned positive for endometriosis. Therefore, if a patient has hematochezia on presentation or review of systems, it is important to consider a colonoscopy in work up and CSR/LAR.

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I. Introduction

Endometriosis affects 10% of reproductive age women with common presenting symptom of pelvic pain.[1-2] The most common extragenital site of deep infiltrative endometriosis (DIE) is the GI tract, the rectum and sigmoid colon, and affects up to 15% of women with endometriosis and commonly present with hematochezia, dyschezia, tenesmus, incontinence, or obstruction.[3-4] Pathogenesis of bowel endometriosis is multifactorial but mostly due to proximity in the Pouch of Douglas to ovarian endometriomas and gravitational deposits.[5] It is widely agreed that surgical management is the primary treatment of bowel DIE.[4] A meta-analysis showed shaving is associated with lower rates of complications than discoid/segmental resection; however, due to variation of invasion, size, and location, shaving/discoid resection may not completely treat the disease.[6-8] Laparoscopic or robotic approach is safe and efficient, with complication rates of anastomotic leakage, rectovaginal fistula, stricture, and low anterior resection syndrome to be 2-5%, 3%, 21%, and 38% respectively.[9-14]

There is limited information on long-term outcomes of patients with endometriosis and bowel resection from a comprehensive gastrointestinal (GI), genitourinary (GU) and gynecologic (GYN) standpoint. Retrospective studies have shown up to a 71-94% reduction of pelvic symptoms especially with concurrent GYN surgeries.[9,12,13,15] One prospective study involving 128 patients who underwent low anterior resection (LAR) for endometriosis showed improvement in bladder pain, sexual function, and defecation frequency.[17] Our study will further investigate the long-term outcomes of endometriosis patients requiring LAR or colonic segmental resection (CSR) to improve counseling of patients with bowel endometriosis.

II. Methods

This study is a retrospective chart review at a single academic institution, Penn State Hershey Medical Center, between 2000-2018 with 3-year follow-up of patients with CSR/LAR for the indication of endometriosis. Inclusion criteria consisted of age 18-45, ICD-9 and ICD-10 codes for endometriosis AND low anterior bowel resection (colectomy laparoscopic, or

open), and surgical diagnosis with direct visualization or histopathologic confirmation of endometriosis. Exclusion criteria included pregnancy. Out of 21 charts generated from the ICD-9 and ICD-10 codes, 9 patients met criteria for specific indication of bowel resection being endometriosis and age (Figure 1).

The chart review consisted of gathering information regarding demographics (age, gravidity, parity, race, insurance, body mass index (BMI)). Endometriosis suppression regimen was also recorded (oral hormone - progestin or combination estrogen and progestin, IUD, Lupron, Orlissa). Preoperative and postoperative symptoms were recorded for GYNsymptoms (dysmenorrhea, dyspareunia, pelvic pain, infertility), GI symptoms (hematochezia, dyschezia, tenesmus, incontinence, incomplete evacuation of bowel, colonoscopy), and GU symptoms (dysuria, frequency, urgency, incontinence, incomplete emptying of bladder). Intraoperative details such as colorectal surgery route (laparoscopic, robotic, or open) and type (anastomosis or divert), and gynecology (concurrent hysterectomy and oophorectomy - unilateral or bilateral) were recorded. Operative time (incision to end time in minutes), estimated blood loss, and days inpatient were also recorded.

On pathology review, gastrointestinal pathology (endometriosis presence, primary focal layer invasion, number of satellite lesions) and gynecology (endometriosis presence) were recorded. Postoperative outcomes were recorded for gastrointestinal outcomes such as complications (leak, fistula, reoperation), Low Anterior Resection Syndrome (LARS: frequency or urgency of stools, clustering of stools, fecal incontinence, increased flatus), and recurrence of endometriosis lesions. Postoperative outcomes were recorded for gynecological outcomes as well, including suppression medication changes (addition/reduction), pain medication changes (addition/reduction), and complications (cuff dehiscence, reoperation). Lastly, follow up duration (in months) was also recorded.

Descriptive statistical analysis was conducted on the cohort of 9 patients. This study was IRB approved for exemption prior to data collection.

III. Results

Patient demographics are reported in Table 1. Nine patients met inclusion criteria with an average age of 40 (range: 28-45 years). Six patients (66.7%) had follow up to36 months; the duration of follow up for the remaining 3 patients was 10 months, 15 months, and 21 months. Pre-operatively, GI symptoms: 3 (33.3%) endorsed hematochezia and underwent a colonoscopy pre-operatively, 7 (77.8%) endorsed dyschezia, and 1 (11.1%) fecal incontinence; GYN: 7 (77.8%) endorsed dysmenorrhea, 5 (55.6%) dyspareunia, 9 (100%) pelvic pain; GU: 1 (11.1%) endorsed urinary incontinence.

Intraoperatively, the route of resection was: 4 (44.4%) laparoscopic, 2 (22.2%) robotic, and 3 (33.3%) open. All patients underwent anastomosis. Six patients (66.7%) underwent concurrent gynecologic procedures: 3 hysterectomy with oophorectomy and 3oophorectomy. The average operative time was 165.8 minutes (range: 111-264 minutes) and median estimated blood loss 50cc (range: 20-800cc). Amedian of 3 days was spent inpatient (range: 1-7 days). Post-operatively, there were no GI complications including anastomotic leak, fistula, LARS, GI recurrence or reoperation. One subject had a GYN reoperation for excision of endometriosis within 3 years of follow up. Two subjects (22.2%) had a reduction in pain medication use.

With regards to symptom change after bowel resection, pelvic pain resolved for 8/9 patients (88.9%) and there was complete resolution of all other preoperative symptoms of hematochezia, dyschezia, fecal incontinence, dysmenorrhea, dyspareunia and urinary incontinence (Figure 2).On pathology, endometriosis was present on the resected bowel segment in 5 patients (55.6%) with 3 having primary focal layer invasion. Of those who underwent concurrent GYN resection, all had endometriosis present on GYN pathology.

IV. Discussion

Our study's findings on improvement of GI, GYN, and GU symptoms are consistent with previous literature.[20] Specifically, CSR for the indication of endometriosis has been shown to significantly reduce fecal incontinence for flatus, liquid stools, clustering of stools, and fecal urgency. Improvement of GI, GU, and GYN symptoms were also found in patients who underwent LAR with the indication of DIE similar to that of our study. A key finding worth noting from our study is that in all patients who had hematochezia and underwent a colonoscopy with positive findings, the pathology also returned positive for endometriosis. Therefore, if a patient has hematochezia on presentation, it is important to obtain a colonoscopy preoperatively and discuss potential need for CSR/LAR as treatment. Therefore, our study's findings regarding the improvement of GI and GYN symptoms post-operatively contribute and corroborate the existing literature giving strength in counseling of patients with DIE requiring bowel resection.[21]

Previous studies on this topic have looked at short-term effects postoperatively, specifically within a year of the procedure.[18,19] Our study extended follow up to three years with the average follow-up in our cohort being 29.11 months. Therefore, the results from this study provide insight into long-term effects of CSR/LAR on patients with DIE specifically, the decrease in use of pain medication postoperatively and decrease risk of

recurrence. There was no reoperation within the three-year follow-up.

Interestingly, our demographics showed an average age of 40 with the vast majority 8/9 (88.89%) of the patients not on any hormonal therapy likely the reason being that 6/9 were status post hysterectomy while the remaining 3/9 had concurrent hysterectomy. The two patients who had uterus in situ and not on hormonal therapy presented with chief complaints of GI symptoms. The older age and post-surgical treatment of endometriosis is suggestive that DIE, especially of the bowel presents later in the manifestation of endometriosis disease progression. Therefore, clinicians need to continue to be vigilant of endometriosis as a chronic disease.

This study contributes to the existing literature which shows that the use of CSR and LAR with the indication of endometriosis can significantly decrease GI, GYN, and GU symptoms. LAR has been found to be a safe and feasible operation for those experiencing DIE, especially for patients with complex endometriosis.[23-24] Although post-operatively, no GI or GYN complications were seen including anastomotic leak, fistula, or reoperation, transanal minimally invasive rectal (TAMIS) resection has been found to lead to significantly fewer complications.[25] A study found that when TAMIS was performed, patients were less likely to experience a change in the quality of life when compared to LAR. This is due to higher chances of complications from LAR. Therefore, future studies may compare changes in GI, GYN, and GU symptoms and complications postoperatively from LAR compared to other surgical methods and minimally invasive resections such as TAMIS.

In addition to the small patient sample, another limitation of our study lies in the retrospective nature of the data collection. Other studies found the presence of more pre- and post-operative symptoms when conducting phone surveys directly with the patients. Therefore, future prospective studies could be conducted to gather a more thorough record of symptoms pre and postoperatively. Previous studies have found that there is a lower risk of gastrointestinal dysfunction when patients underwent LAR due to the preservation of the rectal reservoir and protection of the presacral nerves when compared to those with CSR.[23] Therefore, future research should focus on evaluating changes in symptoms of patients stratified based on the type of resection to allow clinicians to best determine treatment for patients experiencing DIE and provide detailed counseling when selecting the best resection method.

We found a clinically significant reduction in symptoms of hematochezia, dyschezia, fecal incontinence, dysmenorrhea, pelvic pain, dyspareunia and urinary incontinence in patients who underwent bowel resection for the indication of endometriosis. In all patients who had hematochezia and underwent a colonoscopy with positive findings of lesions or masses, the pathology also returned positive for endometriosis. Therefore, if a patient has hematochezia on presentation or review of systems, it is important to consider a colonoscopy in work up and CSR/LAR as potential treatment planning.

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Table 1: Demographics

Age	**40 (6.2)**
BMI	33.8 (5.4)
Reproductive History	
Gravidity	2.4 (2.4)
Parity	1.8 (1.7)
Non-Hispanic Ethnicity	9 (100.0%)
Race	
Black	1 (11.1%)
White	8 (88.9%)
Insurance	
Private	8 (88.9%)
Medicare or Medicaid	1 (11.1%)
Endometriosis Suppression Regimen	
PO Hormone (Combination) Estrogen and Progestin	1 (11.1%)
None	8 (88.9%)

Data reported as mean (standard deviation) or n (%)

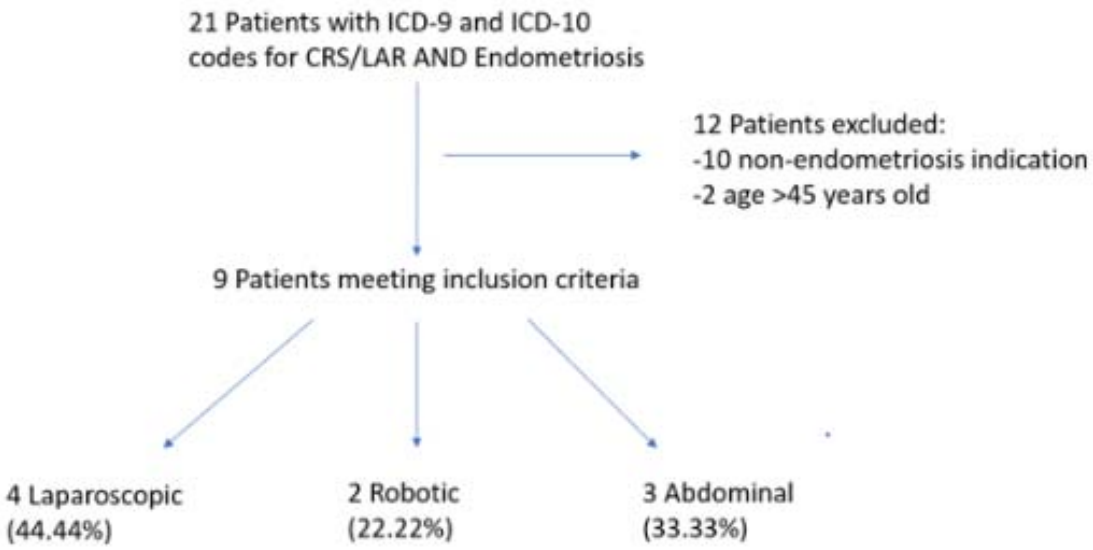

Figure 1: Patient Selection Inclusion and Exclusion

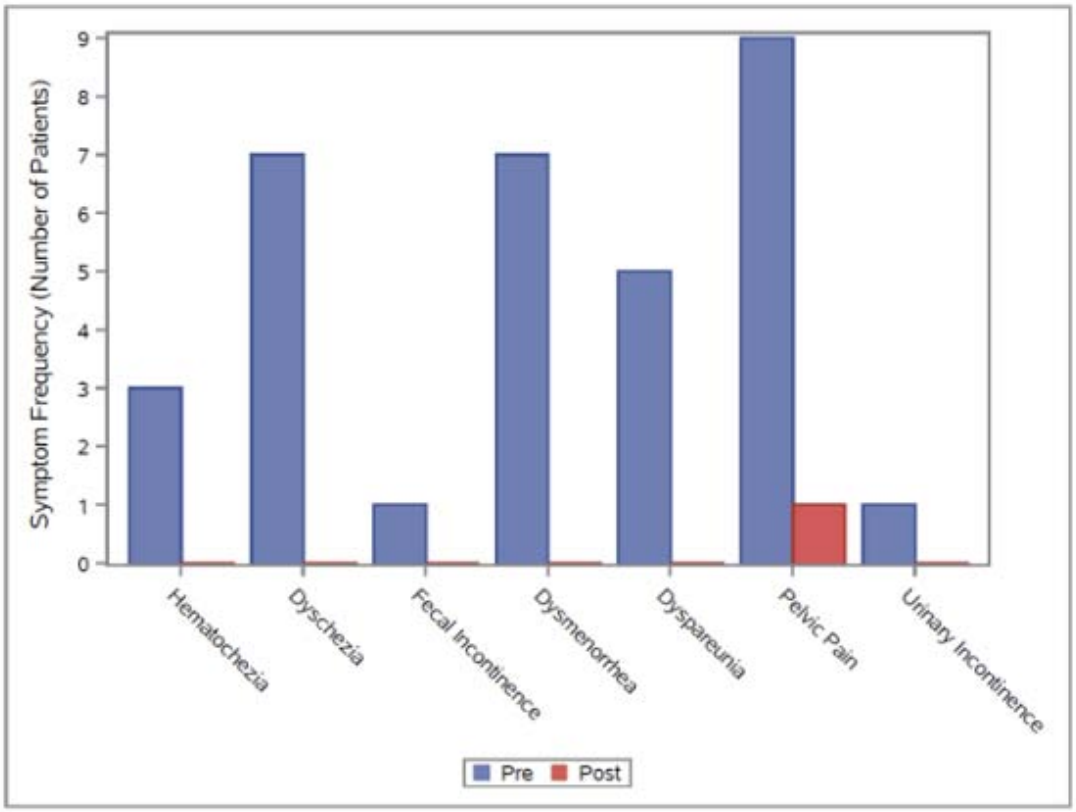

Figure 2: Change in GI, GYN, and GU symptom frequency pre vs. post operative

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Fellows/Associates of Medical Research Council

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- First character must be three lines drop-capped.
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g) Suitable statistical data should also be given.
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19. Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

20. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

21. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

22. Report concluded results: Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

23. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

Informal Guidelines of Research Paper Writing

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear: Adhere to recommended page limits.

Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.
- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

Figures and tables:

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an argument should be.

Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."

Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

The Administration Rules

Administration Rules to Be Strictly Followed before Submitting Your Research Paper to Global Journals Inc.

Please read the following rules and regulations carefully before submitting your research paper to Global Journals Inc. to avoid rejection.

Segment draft and final research paper: You have to strictly follow the template of a research paper, failing which your paper may get rejected. You are expected to write each part of the paper wholly on your own. The peer reviewers need to identify your own perspective of the concepts in your own terms. Please do not extract straight from any other source, and do not rephrase someone else's analysis. Do not allow anyone else to proofread your manuscript.

Written material: You may discuss this with your guides and key sources. Do not copy anyone else's paper, even if this is only imitation, otherwise it will be rejected on the grounds of plagiarism, which is illegal. Various methods to avoid plagiarism are strictly applied by us to every paper, and, if found guilty, you may be blacklisted, which could affect your career adversely. To guard yourself and others from possible illegal use, please do not permit anyone to use or even read your paper and file.

Criterion for Grading a Research Paper (Compilation) by Global Journals

Please note that following table is only a Grading of "Paper Compilation" and not on "Performed/Stated Research" whose grading solely depends on Individual Assigned Peer Reviewer and Editorial Board Member. These can be available only on request and after decision of Paper. This report will be the property of Global Journals.

Topics	Grades		
	A-B	**C-D**	**E-F**
Abstract	Clear and concise with appropriate content, Correct format. 200 words or below	Unclear summary and no specific data, Incorrect form Above 200 words	No specific data with ambiguous information Above 250 words
Introduction	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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