

Case Study

Itching During Pregnancy – Should it be Handled in Routine or on Priority? – Role of Community Medicine Health Post in Bridging the Gaps in the Health System

Running Title: Itching during pregnancy

Ekta Dogra, Sathiabalan Murugan, Anubhuti Sharma, Arun Kumar Aggarwal

Department of Community Medicine and School of Public Health, Post-Graduate Institute of Medical Education and Research (PGIMER), Chandigarh

Correspondence Author: Dr. Arun Kumar Aggarwal, Professor
Email: aggak63@gmail.com

Abstract

Itching in pregnancy is quite common with most common reason being dryness of skin and hormonal influences. It may also be due to Intrahepatic Cholestasis of Pregnancy (ICP), that requires intense monitoring, follow up and management, to avoid adverse pregnancy outcomes. Here we present a case of a third gravida with twin pregnancy and itching in early 2nd trimester. In this case, itching was considered as a part of normal physiology of pregnancy until the severity of itching impaired patient's day to day activities. Though it was presumptively diagnosed at tertiary care institute, there were some gaps at health system level that may have otherwise led to an adverse pregnancy outcome. It propelled us to understand what we can do as community health physicians for cases like these and to build a protocol for follow up of similar cases at community level.

Key words: Pruritus. Pregnancy. Intrahepatic Cholestasis of Pregnancy (ICP)

Introduction

The Department of Community Medicine, Post-Graduate Institute of Medical Education and Research (PGIMER), Chandigarh provides community based services at village Kheri. Kheri has a population of nearly 1650, and is located in block Raipur Rani, District Panchkula, Haryana. A Multi-Purpose Health Worker (MPHW) female posted here provides promotive,

resident doctors from the Department of Community Medicine, PGIMER visit this post thrice a week and provide both clinic-based and community-based health services under the supervision of a faculty member. Residents conduct home-visits for high risk cases and priority households as enlisted by the MPHW.

On one of the days of field based activities, MPHW informed the doctor's

team that there is a case of twin pregnancy with itching, that needs a home-visit.

Pruritus of pregnancy has always been challenging for the treating physician, both in terms of diagnosis and treatment (Details in Box 1). Pruritus during pregnancy may be due to hormonal changes and may also be due to other conditions like Intrahepatic Cholestasis of Pregnancy (ICP). Prevalence of ICP in pregnancy is 0.7 to 5%.[1] It can result in fetal loss. It thus warrants intense monitoring and an early planned delivery.[2,3]

Detailed workup of the case during home visit was as follows:

Background Information of the Case

Client Usha (name changed), 25 year old with gravida three, was at 28 weeks of gestation and having twin pregnancy. She belongs to Upper Middle Socio-economic Class as per modified Udai Pareek Scale, and lives in a joint family with family size of seven members. She is a home-maker and has studied till 10th standard. Her husband is the only earning member of the family. He is employed in a private firm as a contractual clerk. She has a toddler of 3 years of age, currently at home. Other members of the family include two grandparents of age 80 and 85 years respectively; both illiterate, suffering from osteo-arthritis. Her mother-in-law is educated till 5th standard, housewife and suffering from type 2 Diabetes Mellitus and Hypertension. Father-in-law is illiterate, apparently healthy and farmer by occupation. The house is a pucca house with five rooms. All rooms are having adequate natural ventilation and illumination. There is presence of many house-flies, which is problem of many villages in this area due to poultry farms around the village.[4]

Menstrual and Obstetric history

Client's menstrual history was insignificant. She was married four years ago. The couple used condom as method of contraception. Her first pregnancy, three years ago was a spontaneous conception. The pregnancy resulted in preterm birth of a female baby, due to spontaneous premature rupture of membranes at 37 weeks of gestation per vaginally. During first pregnancy, there was a history of itching second trimester onwards; this was not investigated thoroughly (records not available and client does not recall any special given attention to itching). The delivery was conducted at a tertiary care hospital at Chandigarh as the couple didn't prefer to visit the nearby public health delivery system. The reason behind this preference was that not all investigations are available in nearby hospitals and eventually these hospitals too refer to the bigger hospitals; so they directly went to the bigger hospital.

A second conception 10 months ago led to an incomplete abortion at 7 weeks of gestation for which Medical Termination of Pregnancy (MTP) was done at a tertiary care hospital.

Current Ante-natal history: Gestation week wise events in current pregnancy are given below to understand health care seeking behavior and gaps in health systems at various levels:

7 Weeks: Usha herself detected pregnancy at 7 weeks of missing her menstrual period. She purchased a urinary pregnancy test kit from the market as this was not available with local ASHA workers and health workers. The supply is very irregular, so locals prefer to buy the kits themselves. She preferred not to inform any local health worker.

9 Weeks: She visited a tertiary care hospital in Chandigarh for her first check-up at 9 weeks of gestation, since her first delivery was done here, and she had faith in this institute. During this visit she was advised routine pregnancy investigations and ultra-sono-graphy (USG) for assessing fetal viability and placental location. She was prescribed folic acid once daily. She was also advised to register with her local health worker and get Mother Child Protection card made. However, she didn't get herself investigated at this visit, as some prior commitments made her travel back home.

11 Weeks: The local ANM registered her at 11 weeks during the out-reach session conducted in the village. The health worker recorded her blood pressure, weight, height, gave her folic acid tablets, and counselled her to get her investigations.

12 Weeks: She visited the tertiary care hospital the second time at 12 weeks of gestation and this time she got the investigations done. Her haemoglobin (Hb) was 12 gms, thyroid function and fasting blood sugar were within normal limits. Her HIV, HbsAg, VDRL were reported non-reactive. Urine examination parameters were also within normal limits. USG was done by a private radiologist on day of blood investigations after payment of INR 600. Fetal scan showed live intra-uterine twin pregnancy. She was prescribed iron folic acid (IFA) tablet once daily and calcium 500 mg tablet twice daily. She was also advised a level-II scan at 18-20 weeks to rule out congenital anomalies.

The health worker and ASHA replenished her stocks of IFA and calcium tablets every fifteen days at her home.

14 Weeks: She was given TT booster at 14 weeks by the health worker in the out-reach session of the village.

18 Weeks: At 18 weeks of gestation she developed itching all over the body, including palm and sole. The itching was insidious in onset and progressive in nature. The symptoms gradually progressed, impairing her routine activities. Itching became severe during the night time, thus affecting the quality of sleep. She did not inform ASHA, MPHW or ANM about these symptoms, considering these symptoms as normal pregnancy symptoms. Also, she did not get her level-II scan, done, stating dependency on her husband who was unable to take leave.

Itching was not relieved by home-based local remedies like application of coconut oil and ensuring hydration of skin. There was no history of: rashes, severe headache, blurring of vision, epigastric pain, pedal edema, yellowish discoloration of urine and clay colored stools.

First consultation for Itching at 18 Weeks: She went to a private nursing home to consult for itching at 18 weeks of gestation. The general practitioner there gave her symptomatic treatment in form of anti-histaminics and local emollients; and referred her to the public health facility for further investigations and management.

20 Weeks: 2nd Consultation: She consulted the same tertiary care hospital at 20 weeks of gestation. She was advised investigations like liver function test (LFT), hemoglobin, hepatitis viral markers and USG scan of upper abdomen. While other investigations were done on the same day, for USG upper abdomen she was given an appointment after 1 month. Laboratory results were not available the same day and the family was also not informed to see the reports online from the institute website or collect on an urgent basis.

She was prescribed with Tab. Udiliv (ursodeoxycholic acid -UDCA) 300 mg

per orally twice daily (considering a presumptive diagnosis of ICP, though without formal documentation). She was asked to use coconut oil and Calamine lotion for local application twice daily. She was advised for follow-up every two weeks. No provisional diagnosis was made/ documented. She and her family were not informed about the possible disease condition and its possible impact on fetus and mother.

22 Weeks: Home visit: The team of our health post visited the family at 22 weeks of gestation. By this time husband had brought the reports from tertiary care hospital. LFT results were within normal limits (SGOT/SGPT: 45/37 IU/L, Serum Bilirubin: 0.2 mg/dL). Viral markers were reported non-reactive. She had been following all prescription given by the doctor. Among investigations, only her USG scan was due.

The team advised family to get USG scan at the earliest. She was also counselled about the condition she was suffering from. She was suggested to have regular and complete follow-ups. However, she didn't go for follow up stating family issues and relief of symptoms. Since her scan (USG) was due in 2 weeks' time, she preferred to have consultation at the same visit.

24 Weeks: USG done at 24 weeks of gestation showed hepatomegaly. It also showed two, live intra-uterine fetuses corresponding to 24 weeks gestation and estimated foetal weight of 345 ± 20 grams each. At the same time LFT were also repeated. Urine report was negative for the presence of bile salts and pigments. She was asked to regularly visit the tertiary care hospital at-least once in 14 days. However, even during this visit, the importance and urgency follow-up was not highlighted.

26 Weeks: As advised, this time she followed up at tertiary care hospital after 14 days. In this visit again Liver Function Tests were repeated. Her serum markers were found to be elevated with, S. Bilirubin level 2.2mg/dL, SGOT 46 IU/L, Alkaline phosphatase 287 IU/L, S. Albumin 2.98 g/dL, PT 14.0, aPTT 46.6, Hb 10.0 g/dL and peripheral smear report gave the impression of, normocytic normochromic anaemia.

30 Weeks: A follow-up visit was done by the team again at 30 weeks. It was noted that since her symptoms got relieved, she stopped taking Udiliv tablets for last 3 weeks. She also didn't go for further follow-up visits, and stated the following reasons:

- a. Relief of symptoms.
- b. Medicine was costly and she was not getting medication free of cost from government supply. Medication for each week costed her INR 1000.
- c. Taking leave would have costed her husband his daily wage. She was dependent on her husband to take her to hospital.
- d. She and her immediate family felt that itching is normal in pregnancy.

She was counselled again for regular follow-up visits. It was stressed upon by the team that since she is having multiple pregnancy, adds to the need for follow-up. The family members agreed to that. She was also counselled for regular fetal movement count and report immediately if daily fetal movement count observed was less than 10 per 24 hours. To facilitate her in recording fetal movement count, she was asked to put on a knot in her dupatta every-time she felt a kick or baby's movement. She was informed that baby movements can be better appreciated if she lies down for 10-15 minutes after meals. In addition birth-preparedness plan was also discussed with the family. MPHWH helped the family to make the plan. They were counselled that since it is a twin pregnancy

with ICP, the pregnancy may need to be terminated early to avoid poor fetal outcomes. However, as her itching symptoms were under control, she didn't go for follow-up despite counselling.

32 Weeks: At 32 weeks, her itching symptoms reappeared. She then went for a follow-up visit. At this visit she was put on Udiliv again. Now, she was asked by the tertiary care hospital doctors to have a weekly follow-up. This time again, the urgency was not communicated. Also, due to dependency on her husband she was not able to comply for follow-up visit before 34 weeks.

34 Weeks: At 34 weeks of gestation she had a follow-up visit. She was admitted for regular monitoring and appropriate management during this visit. Then on, she was monitored in the hospital till 35 weeks of gestation. Steroids were given to the client for ensuring lung maturity of fetus.

35 Weeks: After due monitoring at the tertiary care institute, induction of labor was done at 35 weeks of gestation. She delivered per vaginally healthy twin boys in the institute. Birth weight was 2000gm and 1800gm respectively for the two neonates. The neonates were kept under observation in Neonatal Intensive Care Unit (NICU) due to low birth weight. No other complications were reported among the neonates. The mother also did not develop any complications during intrapartum and post-partum period. Her itching was relieved by 2nd post-partum day. The mother and neonates were discharged after 10 days of delivery.

Discussion

We have presented here the chain of events in management of a pregnancy with twins, with severe itching involving soles and feet, that started at 18th week of gestation. The client Usha was a gravida 3, had her first-born preterm, and had a

history of itching during this pregnancy; her second pregnancy ended in abortion. Client Usha was thus at significant risk of developing ICP given her twin pregnancy. As per literature, ICP in the second and third trimesters significantly increases the risk of adverse foetal outcomes. Furthermore, the risk of adverse foetal outcomes caused by the second trimester ICP appears significantly higher than the third trimester ICP.[5,6,7] Risk is also higher in case of twin pregnancy.[8] ICP and mono-chorionic di-amniotic twin pregnancy, gestation age at diagnosis of ICP < 32 weeks are associated with adverse perinatal outcomes.[9]

In this case, client Usha was prescribed medications without waiting for laboratory investigations. Literature favours prescription of UDCA in ICP. Although there is lack of a clear mandate on use of UDCA, it is still considered the drug of choice for management of ICP. UDCA is well tolerated by pregnant women. With low-dose UDCA treatment the obstetric outcome was found good. However, authors recommend careful obstetrical follow-up.[9] In a meta-analysis, UDCA was found to be effective and safe to improve pruritus and liver function in ICP. UDCA also was also found to reduce adverse maternal and fetal outcomes in pregnant women with ICP.[10]

In the reported case, certain gaps in health care delivery system are worth noticing. Our case, who developed severe itching during early second trimester, with possible ICP related preterm birth in first pregnancy, was likely to have severe pregnancy outcomes. Her laboratory investigation and diagnosis confirmation should have been fast-tracked. The communication of treating doctors with the client should have reflected urgency. However, despite best of technical knowledge, health system even at tertiary level could not deliver this. Laboratory investigations were ordered and done in

routine at the day of the visit, however the appointment scheduled for USG was a month later from the day of recommendation. Client was advised frequent follow-ups but need and urgency of the same was not highlighted.

There are two interesting behaviors observed in this case that need discussion. First, she bypassed the routine primary and secondary health care system and directly accessed tertiary care system. This was based on the perceptions, beliefs and values attached with these health systems like investigations not being available and that eventually patients are referred to tertiary care institutes. So the planned intended behaviour was to directly approach tertiary care. She was compliant to the advice of tertiary care doctors to the extent that she registered with local health worker (whom she had previously bypassed) and received routine antenatal care.

This behaviour can be explained by both Social cognitive theory [11] as well as the Theory of Planned Behaviour.[12] According to the Social cognitive theory, behaviour is dependent on personal and environmental factors. In the reported case, client perceived barriers at primary and secondary level, and satisfaction and utility at tertiary care level. Family was confident to access tertiary care and this resulted in behaviour of getting care from tertiary care hospital. According to the theory of Planned Behaviour, in this case the belief and value in the local health system was that of inadequate care provision, this belief reflected in the attitude and intentions to seek care from tertiary care hospital. The family was self-confident to access care at the tertiary care level.

Second important behaviour noted here is that of not complying to suggested follow-up visits for itching in pregnancy. As per theory of Planned Behaviour, 'intention' is

a key element in the behaviour change framework, intention determines behaviour. Intention is determined by an individual's attitude (beliefs and values about the outcome of the behaviour), subjective norms (beliefs about what other people think the person should do, social pressure) and perceived behaviour control.

In our case following perceptions were observed the following perceptions:

Antenatal mother- “*kharish toh mujhe pichli pregnancy mein bhi thi paar kuch nahin hua; ye to ho hi jaati hai aur davai khaa kaar theek ho jaati hai.*”[I got itching in last pregnancy as well, it (itching) does happen and gets relieved after taking medicines]

Mother-in-law- “*itni badi dikaat to hai nahin; kharish hai toe hai, thodi bahut hume bhi ho jaati hai; zyada ho jaye to doctor ko dikhaa lena chahiye tha*”[It is not that big a problem. Little bit of itching does occur even for me. If it increases then it should be shown to doctor]

ASHA worker- “*kharish to pregnancy main honi hi hoti hai, davai se theek ho jaati hai aur kuch nahein hota*”[Itching does occur in pregnancy. But it gets relieved with medicines and nothing happens (no adverse event happens)]

ANM- “*ye log pura din pasine main kaam pae laage rahte hain toe kharish hi honi hai. Jub zayada hoe jae toe apne aap yae log doctor ke pass chale jaate hain*”[These people work and sweat the entire day and hence it is natural for them to get itching. If it increases they themselves show to local doctors]

MPHW PGIMER- “*do saal pehle aek aurat ko bhi aise hi khujli thi; tub home visit pe doctor ne bataya tha ki ye ek bache ke liye jaan leva bimari ho sakti hai. Hua bhi vahi, uska bacha 38 weeks pe paet mein hi maar gaya. Voe kahin*

dikhane nahein le kar gayae.” “*Tuub se main saare itching vaale cases koi doctor ko zaroor dikhati hoon.*” [Two years ago, there was another case with itching. During the home visit, the doctor had told that such problem can be fatal to fetus. And the same thing happened. She delivered stillborn baby at 38 weeks. She had not shown anywhere. Since then I always show such cases to our doctors]

Thus perceptions, social norms at individual, family and community health workers were largely that these problems are usual and trivial. However, the health worker associated with us was well informed due to on-going mentoring by the resident doctors. This led us to pick up the case, and provide information about threat of this condition.

However, even this information could not make the family act. This was attributed to the barriers in the environment. Client was dependent on her husband to visit the hospital and it was not possible for him to take frequent leaves. The problem got compounded when the hospital took more time for even routine investigations like USG.

Case highlights many gaps at the level of health system. Community Medicine health post did address certain gaps. However, the same could have been addressed in a better way at the treating institutions. If gone undetected, this case may have resulted in an adverse pregnancy outcome.

What is way forward?

Following actions can be taken to address this problem:

1. History of itching should be asked by health care providers in routine. All such cases should be sent for investigations.
2. All investigations in high risk cases should be made available on priority and family should be informed how to

- access the report using online systems, now available at many places.
3. Such high risk cases should not be given long dates. Complete workup should be done on the same day.
4. Family should be communicated the risk and threats of possible condition a pregnant women is facing and the consequences of non-compliance. Communication should also explore possible barriers to compliance and the possible support to family. For example, in this case, family could have been linked up to the local health system for monitoring of specific parameters with facility of tele-communication.
5. Health care workers need to be updated on pruritus during pregnancy, causes and consequences and the role they can play.

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Box 1: Causes and Management of Pruritus during Pregnancy

Pruritus in pregnancy is also called as dermatoses of pregnancy. Diagnosis dermatoses of pregnancy can be based on most recent classification by Ambros-Rudolph et al in year 2006.

Although itching in pregnancy may be physiologic or associated with common inflammatory skin diseases, drug-induced, infections, or infestations (e.g. Dermatitis, pityriasis rosea, scabies, pemphigoid) occurring coincidentally during pregnancy. In addition to these, it may be due to various systemic diseases. Severe generalized pruritus, especially if predominant on the palms and soles, in the absence of primary skin lesions suggests intrahepatic cholestasis of pregnancy (ICP) which is known to be associated with fetal loss.

Cholestasis of pregnancy is the second most common cause of jaundice in pregnancy. It is always a diagnosis of exclusion when other systemic causes of itching are ruled out. It is due to relative fall in the hepatic blood flow which leads to a decreased clearance of metabolites of liver. Some of these metabolites release histamine and proteolytic enzymes such as lysosomal proteases affecting free nerve endings and thus itching. Specific risk factors include multiple gestation, genetic predisposition, past history pruritus in previous pregnancy, OCP intake, hepatobiliary disease and family history.

Symptoms: ICP usually presents in the third trimester of pregnancy, around weeks 30 to 31, but has been reported as early as 8 weeks of gestation. Itching, particularly on the hands and feet (often is the only symptom noticed), dark urine color, pain in the right upper quadrant (RUQ) without gallstones, pale/light coloring of stools, fatigue, loss of appetite and depression are among other symptoms. Rarely, it may present also with Jaundice or nausea

Investigations: Hepatic panel: TAA elevated in 60%. ALT more sensitive followed by AST. Bilirubin and GGT are normal in most patients. All causes of Hepatitis and Epstein-Barr virus/cytomegalovirus serology to rule out secondary causes. The diagnosis is confirmed by laboratory analysis showing elevated serum bile acids (the gold-standard test). Total Bile Acids more than 10 micro mol/L indicates ICP. But normal values do not rule out the diagnosis.

Treatment: Treatment with ursodeoxycholic acid (UDCA), can result in rapid improvement in our patient's symptoms. Other symptomatic management needed are: Topical anti-itch medications, cold baths. Vitamin K supplements administered to the mother before delivery and again once the baby is born to prevent intracranial hemorrhage. Bi-weekly non-stress tests which involve fetal heart monitoring and contraction recordings. Regular monitoring both bile serum levels and liver function. Dexamethasone injection to ensure the maturity of the baby's lungs if delivery needs to be planned pre-term.

Mainstay of management is: Elective early delivery. As most still births cluster between 37-39 weeks. Delivery can be planned as early as 34-37 to maximum 38 weeks depending on whether multiple pregnancy, level of TBA, regularity of monitoring.

Complications: **Fetal:** Increased risk of spontaneous intrauterine fetal demise in the third trimester. Other risks are: meconium-stained liquor, fetal asphyxia and spontaneous preterm delivery. Risk increases with increased age of gestation and higher level of bile acids. Most dreaded complication is sudden fetal demise even in minute to hours after a reactive non-stress test or normal cardio-tocographic monitoring. Fetal surveillance cannot prevent stillbirth, but can detect fetal distress. It should be done twice weekly. Women should also monitor their baby's movements, and if they notice movement slowing down, they should contact their provider immediately. **Maternal:** No immediate complication, but a theoretical risk of pre-eclampsia & gestational diabetes remains. Itching gets relieved within one month of delivery. **Prognosis:** No long-term effect on children whose mothers have suffered from ICP, though affected women have increased rates of hepatobiliary disorders in later life.

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