

Salmonella Typhi Isolation in a Pregnant Woman: Determining the Importance

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Infection of pregnant women with *Salmonella* occurs as often as its infection in the general population, with an incidence of 0.2% positive rectal cultures at the time of delivery [1]. The different modes of transmission by *Salmonella* Typhi and *S. Paratyphi* A are vertical transmission from the mother and transmission from exogenous sources. There are various reports on transmission of *S. Typhi* and *S. Paratyphi* to the foetus [2]. A vertical transmission occurs either via a transplacental spread of the organism when the mother has symptomatic typhoid fever or as a result of *S. Typhi* or *S. Paratyphi* A bacteraemia during labour, with a spread to foetal circulation or via oral route during birth due to an inadvertent faecal contamination of the lower birth canal [3]. This infection leads to infection of the intrauterine contents and ultimately, foetal loss. Hereby, we are presenting a case where *S. Typhi* was isolated from the high vaginal swab of a pregnant woman with an adverse outcome of pregnancy.

CASE REPORT

A 24-years-old primigravida (16+3 weeks) presented to the Emergency Department of Obstetrics and Gynaecology of our institute, with the chief complaints of leaking per vaginum since 1 day and bleeding per vaginum since 3 hours. Her general physical examination was unremarkable. On abdominal palpation, uterus was found to be 14 weeks in size and soft and it was non-tender, with a normal tone. On per vaginum examination, cervical os was found to be closed, with presence of a non-foul smelling, yellowish, dirty discharge. Subsequently, on ultrasonography, a single foetus with no cardiac activity and absence of liquor was found. As was indicated, termination of pregnancy was decided, with informed consent of the patient. Thereby, she was given 400µg misoprostol P/V, following which she had a spontaneous expulsion of foetus and placenta with membranes and sac. She was also given intravenous antibiotics (cefoperazone + sulbactam, metrogyl, gentamicin), calcium and iron supplements and was discharged urgently. Patient could not be followed up further, due to her hostile attitude.

She had been married for the past 2 years and had a spontaneous conception. Her menstrual history was normal. However, the patient had not undergone any antenatal check up during her pregnancy. On laboratory investigations, haemoglobin was found to be 7.7g/dl and Total leucocyte count (TLC) was 13,400/mm³, with mild neutropaenia. Platelet count, coagulation profile, serum electrolytes and renal function tests were all within the normal range.

The blood sample, high vaginal swab and placenta with membranes were received in the Department of Microbiology for culture and sensitivity testing. The samples were processed as per standard microbiological methods. Blood culture was found to be sterile after 72 hours of incubation. *Salmonella* Typhi was isolated from high vaginal swab, but not from placenta. On antibiotic susceptibility testing, *S. Typhi* was found to be resistant to nalidixic acid, to be intermediate to ampicillin and ciprofloxacin and to be sensitive

to chloramphenicol, cefotaxime, ceftriaxone, cotrimoxazole and azithromycin.

DISCUSSION

Hormonal changes which occur during pregnancy impair the cell Mediated immune response and they increase the susceptibility of pregnant women to various infections. Pregnancy itself is considered as a high risk factor for acquisition of *Salmonella* infections [4]. It has been estimated that the incidence of foetal loss which occurs from untreated typhoid cases during pregnancy could be as high as 80% [1]. Review of literature has shown that not only humans, but that *Salmonellae* have been well associated with abortions in animals like sheep, cattle and horses [5]. In humans, various species of *Salmonella*, namely Typhi, Paratyphi, mississippi, enteritidis oranienburg, Virchow, etc have been found to be associated with pregnancy loss [1,2,5-7]. In a case which was almost similar to ours, Kaur et al., [8] isolated *S. Typhi* from the HVS of a primigravida (6th week) who had high grade fever one month back and had presented with a miscarriage later on. However, in our case, the female was asymptomatic (16th weeks) and as such, she had no history of fever or any other complication. This point is important, considering huge population of females who live in endemic areas. Normally, a presence of fever or diarrhoea raises a suspicion of presence of infection.

Spontaneous miscarriages in the second trimester without a premature rupture of membranes, suggest a transplacental transmission. In the present case, we isolated *S. Typhi* from HVS but not from placenta and hence, the exact reason for her miscarriage could not be precisely ascertained as being caused by *S. Typhi* infection. The asymptomatic carriage in HVS by the patient was significant. In the literature, researchers had reported isolation of *Salmonella* from cultures of high vaginal swabs, which had suggested the carriage of the organism in them [9]. Mohanty et al., [2] reported nine cases of *Salmonella* (eight cases of and one of *S. Paratyphi* A) infection from cultures of blood and high vaginal swabs in pregnant women during 2003-2005, which suggested the occurrence of infection and carriage state in pregnant women.

It was reported that 2%-5% of patients with typhoid fever could become chronic carriers. Carrier state persists throughout the life and it is not only responsible for endemicity but also for outbreaks of disease in the regions which are associated. Lack of a proper health education and problems with sanitation and sewage disposal are major drawbacks in developing countries, which can lead to a carriage, which might have been the reason in this case also, as the patient was residing in the suburban area of Chandigarh, India. Another significant finding was that during that period, we isolated 22 strains of *S. Typhi* in a time of 15 days from same area during a mini outbreak (data is still unpublished). Therefore, determination of incidence of carriage state for typhoid in a given population, especially among pregnant women, is important, to control its

further dissemination. Salmonellosis is normally not included in differential diagnosis of neonatal sepsis or fever which occurs during pregnancy. However, it is necessary to be considered, to prevent the significant morbidity and mortality, which can occur, in both the foetus and mother, due to *Salmonella* infection, especially in endemic areas.

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