

# Life-threatening pneumocystis pneumonia in healthy pregnant women

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## Background

Pneumocystis Pneumonia (PCP) is one of the most common infections in patients with Human Immunodeficiency Virus (HIV). It is caused by *Pneumocystis Jirovecii*, an opportunistic fungal infection, which is spread airborne from person to person. *P. Jirovecii* rarely gives rise to symptoms in immunocompetent individuals, although they may be carriers. PCP has been reported in people with immunosuppression other than HIV, such as those receiving systemic immunosuppressive treatment, associated with malignancies or inflammatory conditions.

## Material

An 18 year-old woman, refugee from Syria, had been residing in Denmark for four months, was admitted in the 30+1 week of pregnancy due to pain in the lower abdomen and respiratory difficulty. Cardiotocography (CTG) was normal and trans-vaginal ultrasound showed shortening of the cervix (17 mm). Because of the possibility of a premature birth, the patient was treated with Celestone 12 mg x 2 i.m. Furthermore the patient had an *Escherichia Coli* Cystitis and antibiotic treatment was initiated.

Two days later, the patient continued having respiratory difficulty, and an X-ray of the thorax showed several bilateral infiltrations compatible with Acute Respiratory Distress Syndrome (ARDS). An echocardiogram (ECG) did not show significant hemodynamic signs of lung embolism. In Intensive Care Unit the patient was put on a respirator due to respiratory failure.

On maternal indication an emergency Caesarean section in general anesthesia was performed on the third day. In spite of increased respiratory treatment, the patient's condition worsened with a sustained desaturation down to 65%. Therefore, Extra Corporal Membranous Oxygenation (ECMO) was started and she was transferred to the Intensive Care Unit at Aarhus University Hospital in Skejby.

Bronchoalveolar lavage (BAL) showed colonization of *P. jirovecii*, HIV-RNA and HIV-antibodies were negative; CD4+ and 8+ levels were normal; marginal decreased IgG and slightly increased IgM.

After five days of ECMO treatment, the patient slowly improved. Mother and child were discharged in satisfactory condition after a total of 20 days in the hospital.

## Conclusion

We have presented a rare case of a healthy, presumably immunocompetent, pregnant woman who unexpectedly developed fulminant pulmonary failure due to a *P. Jirovecii* infection.

Research suggests that pregnancy induces an altered immune response, with increased differentiation of the Th2 CD4 + lymphocytes rather than Th1 CD4 + lymphocytes, which result in a higher morbidity and mortality rates. The reason for this is believed to be due to a combination of modulated cytokine and hormone production as well as reduced immunity to specific infections.

One single study found, that pregnant women, especially multiparous, are more frequent carriers of *P. Jirovecii*, increasing the risk of infection in susceptible individuals like the newborn.

PCP is described in the literature after systemic treatment with 16-30 mg Prednisolone daily in acute disorders.

The pathogenesis behind PCP is currently thought to be multifactorial. The patient has following risk factors that could affect the immune system; pregnancy, corticosteroids treatment and competing urinary tract infection.

Many issues are unclear concerning PCP, indicating a need for further concentrated study in such areas as the incidence of global carrier status, the risk of vertical transmission, the need for prophylactic treatment in vulnerable populations, and isolation during active infection.

We wish to draw attention to the fact that pregnancy in some cases may be compared to immunosuppression. Therefore, more opportunistic infections should be included in the differential diagnostic considerations.

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