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Ventricular Septal Defect In A New born To A Mother With Inadvertent Exposure To Chest Radiograph During Pregnancy: A Case Report

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Abstract:
We present a case of a newborn with ventricular septal defect (VSD) born to a mother who underwent a chest radiograph during pregnancy. A 25-year-old woman with chest pain underwent a chest radiograph at 7 weeks' gestation, which was normal. The radiation exposure was estimated to be approximately 1 rad (0.01 Gy). At 39+4 weeks' gestation, she delivered a male neonate weighing 2.5 kg, who had a 3 mm VSD on echocardiography. This case highlights the potential association between maternal radiation exposure and congenital heart defects in the new-born. Further studies are needed to explore this association and to counsel patients about the risks and benefits of radiation exposure during pregnancy [1].
KeyWords: Ventricular septal defect (VSD),Congenital Heart Disease, Maternal exposure, Pregnancy Complications, Chest radiograph

INTRODUCTION:

A major contraindication of radio diagnostic procedures is pregnancy. Evaluation of radiation exposure should involve consideration of the types of examinations performed and when performed, as well as radiation dose and risk estimation. Inadvertently exposed patients should be based on available human data with an emphasis on the minimal impact of such procedures. We present a case of a new born with VSD born to a mother who had an x-ray chest during pregnancy [2].

Case Report:

A 25-year-old woman with complaints of chest pain consulted her family physician. The physician ordered a chest radiograph, which was normal. Subsequent sonographic examination revealed that the foetus had been at 7 weeks' gestation when the woman underwent chest radiology studies. The patient asked her family physician whether a therapeutic abortion would be necessary, but the physician and the radiologist advised her that the radiation exposure, estimated to be approximately 1 rad (0.01 Gy), was insufficient to injure the foetus [3]. At 39+4 weeks pregnancy, she delivered a male neonate weighing 2.5 kg who had a 3 mm sub aortic VSD on echocardiography. The baby's parents were primiparous, non-consanguineous, and had no family history of heart disease. The mother had no medical problems and no history of diabetes, hypertension, or other medications except iron, calcium, and vitamin supplements during pregnancy.

DISCUSSION:

This case highlights the potential association between maternal radiation exposure and congenital heart defects in the newborn. While the exact mechanism is unclear, it's possible that radiation during critical periods of foetal development may contribute to cardiac anomalies [4]. Further studies are needed to explore this association. According to Hall, radiation-induced abnormalities in foetuses who are less than 2 weeks' gestation or more than 15 weeks' gestation are extremely unlikely [5]. Foetuses between 2 and 15 weeks' gestation are considerably more sensitive to adverse radiation effects.

Conclusion:

In our child, the ventricular septal defect that developed might be related to radiation exposure during the mother's antenatal period. There was no consanguinity between the parents, and there was no family history of congenital heart disease. One should consider counselling the possibility of congenital heart disease along with other anomalies if inadvertently exposed to chest radiograph during pregnancy [6].

Declaration of Patient Consent:

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in

the journal. The patients understand that their names and initials will not be published, and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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REFERENCES:

1. Wagner LK, Lester RG, Saldana LR. Exposure of the Pregnant Patient to Diagnostic Radiations: A Guide to Medical Management. Philadelphia: Lippincott; 1985:19-223.
2. Swartz HM, Reichling BA. Hazards of radiation exposure for pregnant women. JAMA. 1978; 239(18):1907-1908.
3. Bushong SC. Management of the pregnant employee and pregnant patient. Contemp Diagn Radiol. 1982; 5:1-6.
4. Whalen JP, Balter S. Radiation Risks in Medical Imaging. Chicago: Year Book Medical; 1984: 43-48, 78-79, 83.
5. Hall EJ. Radiobiology for the Radiologist, 4th edition. Philadelphia: J. B. Lippincott Company; 1994: 363-378, 419-452.
6. American College of Radiology. Medical Radiation: A Guide to Good Practice. Reston, Va.: American College of Radiology; 1985: 4-8.