

EFFECT OF RADIOIODINE (^{131}I) THERAPY ON GONADS

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Use of radioiodine is, absolutely contraindicated during pregnancy,¹ although dose to fetal thyroid is small, but it is sensitive and may be of medicolegal consequence. However, gonadal exposure is extremely low (less than a diagnostic radiograph), genetic effects are unlikely, extensive studies have failed to show ^{131}I related neoplasm or birth defects.²⁻⁸ No significant increase in genetic abnormalities has been documented in children of Japanese parents exposed to atomic radiation,⁹ and there is an increased tendency to treat young patients with ^{131}I in recent years.¹⁰ In human beings, organogenesis does not begin until the third week after conception. There is no evidence that radiation of a conceptus in the early weeks of pregnancy is more dangerous than irradiation of the ovary before fertilization. The International Commission on Radiological Protection (ICRP) withdrew support for the 10-day rule in 1984. Many agree that pregnancy should be allowed to continue after known exposure of less than 10 centi-Gray (cGy), but some would reduce the upper limit to 5 cGy in the second trimester¹¹ (1 cGy = 1 rad). Patients treated with ^{131}I are advised to delay conception for at least 6 months after treatment.¹²

Propranolol is also used in the treatment of hyperthyroid patients. It should be avoided during pregnancy as it increases uterine muscle tone which may result in a small placenta and fetal growth retardation. It can also induce neonatal bradycardia, hypoglycemia and impaired response to anoxia.¹³⁻¹⁴ Full or partial recovery of dose-dependent spermatid damage of 12 men in 2.5 years is demonstrated after surgery and ^{131}I therapy for thyroid cancer.¹⁵⁻¹⁶ In another study about 25% of patients treated with ^{131}I for thyroid

cancer suffered no alterations in FSH levels, whereas the remainder had transient rises in FSH levels. Patients treated repeatedly over a prolonged period had a reduced sperm count.¹⁷ Thyrotoxic patients usually receive much smaller dose of ^{131}I than cancer patients, but anxiety prevails regarding its effect on spermatogenesis. Therefore we like to report a case of healthy boy born to a man treated with ^{131}I for thyrotoxicosis and a case of a healthy daughter born to a woman who inadvertently received radioiodine therapy during early pregnancy.

CASE—1

A man of age 40 years complained of perspirations, weight loss inspite of increased appetite, palpitations, insomnia and was diagnosed as a case of diffuse toxic goitre on 19.6.95 at NMC, Dinajpur (Table 1). He took Carbimazole and thyroxine tablets irregularly from else-where with no improvement. He received radioiodine therapy (5 milliCuries ^{131}I) on 18.1.97 at NMC, Rangpur. He was reluctant to have it as he had only three daughters and no son. However, later on he was improved as seen in the follow ups done on 5.2.98 and 30.8.98, but his wife gave birth to a dead son on 14.6.98. She conceived before her husband's radioiodine therapy, but both became gloomy as she had three fetal deaths earlier. However, they were assured and fortunately she gave birth to a son on 8.11.99 by Caesarean section. This only son is in good health upto the last followup on 13.2.2000.

CASE—2

A woman of age 30 years complained of

increased sweating, weight loss inspite of increased appetite, palpitations, insomnia and was diagnosed as thyrotoxic in February, 1995. She took carbimazole (neomercazole) 45 mg/day for a month with little improvement and received ^{131}I therapy (10 milli-Cuies) on 18.5.95 at Nuclear Med. Institute, Dhaka. At first follow-up, she disclosed that her last menstrual period (LMP)

started on 25-5-95 and ultrasonography revealed gestational sac of 10 weeks 2 days, She was advised therapeutic abortion but she did not agree and gave birth to a healthy daughter on 12-3-96. The baby is in good health till 7-9-99, however, her mother is now hypothyroid and on thyroxine (100 microgram daily) therapy (Table-2).

Table 1 Hormone levels of Case-1

Date	T ₃ NR 0.8—3.2 nmol/L	T ₄ 64.—175 nmol/L	TSH 0.4—5 mIU/L
19-06-95	7	219	--- “
17-8-97	8.9	134	0.4 “
13-02-2000	3.1 “	103 “	0.3 “

NR= Normal Range

Table 2 Hormone levels of Case-2

Date	T ₃	T ₄	TSH
19-3-95	8.89	214	0.09
13-4-95	5.39	213	0.02
5-9-95	0.3	60	0.17
31-3-98	0.48	20	49.9
7-9-99	2.5	50	17.75

CONCLUSION

^{131}I Iodine therapy did not damage the gonads in these cases, However, more observations should be continued and we do not recom-

mend the use of radioiodine during pregnancy and lactation. Any how, the present cases show that radioiodine is not teratogenic.

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