THYROTOXICOSIS AFTER EXTERNAL BEAM IRRADIATION OF OROPHARYNGEAL CANCER

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INTRODUCTION

Thyrotoxicosis is a well-known complication of intra thyroidal irradiation from ingestion of iodine ,[131] but it is hardly described following external beam irradiation of the head and neck region. Hypothyroidism is the most frequently recognized functional abnormality of the thyroid gland which occurs in about 45% of patients receiving doses between 30 to 70Gy or more.[1,2] Additionally autoimmune thyroiditis, Graves' disease, euthyroid Graves' ophthalmopathy and a silent thyroiditis like syndrome have been described.[3,4] Thyrotoxicosis after oropharyngeal irradiation has also been reported.[5]

CASE REPORT

A 38 year old male civil servant presented to the outpatient department with complaint of recurrent sore throat for 1 year. There was also odynophagia and dysphagia with associated fever. No associated change in voice. There was history of heavy alcohol ingestion. Clinical examination revealed a greyish swelling measuring about 2x3 cm in the left soft palatal area with enlarged tonsils and a solitary submandibular lymph node mobile non-tender.

X-ray of the Paranasal sinuses showed a soft palatal mass and a left antral polyp. Blood profile and chemistries, chest X-ray and Abdomino-pelvic USS were within normal limits. Patient then had an excision of the left side soft palatal mass. Biopsy result confirmed moderately differentiated mucoepidermoid carcinoma. He then had external beam radiotherapy 42Gy in 22 daily fractions over 4½ weeks using oblique lateral opposed wedged fields. On follow up patient was disease free.

About five years after treatment patient was presented with complaints of weight loss for 8 months, polyuria, polydipsia and polyphagia for 4 months. There was also history of neck swelling, palpitations, heat intolerance and tremors. Examination found an anterior neck swelling that moves with swallowing, firm non-tender and no associated lymphadenopathy. Patient also was observed to have proptosis and tremors of the outstretched hands, the palms were also warm and moist. Pulse rate was 100 beats/minute regular, BP was 140/60 mmHg with wide pulse pressure. An initial assessment of hyperthyroidism to rule out diabetes mellitus was made.

Soft tissue neck X-ray showed thyroid enlargement. Thyroid function test revealed elevated T3 and T4, fasting blood sugar and 2 hours post prandial were normal. Chest X-ray, blood profile and chemistries, urinalysis were all within normal limit. Electrocardiogram showed sinus tachycardia. FNAB was done which confirm a colloid goitre. He was placed on carbimazole and propranolol and was referred to surgeons for review. He then had subtotal thyroidectomy. Patient had reversal of symptoms and has been on regular follow up free from recurrence.

DISCUSSION

It has been reported in literatures that both iodine.[131] and external beam irradiation can lead to thyroid functional disorders.[2,4,5] External-beam radiotherapy has been known to induce various thyroid disorders, such as primary hypothyroidism (3-92%), Graves' disease (0.1-2%), silent thyroiditis (0.6-3%), Hashimoto's thyroiditis (0.7-48%), Graves' ophthalmopathy (0.2-1.3%), benign adenoma (0.6-3%), and thyroid cancer (0.35%).[2,4]

Hyperthyroidism though not as common as hypothyroidism has also been reported after irradiation.[5,6,7] Graves' disease is said to occur 7 to 20 times more frequently in irradiated than non-irradiated individuals.[4] A case of thyroid storm temporally related to the administration of intensity modulated radiation therapy has also been reported.[8] Katayama et al. (1986)[1] reported that 15% of patients with hyperthyroidism had been treated with neck disease. The latency period of onset of hyperthyroidism ranges from 3 months to 40 years.

External-beam radiation promotes the release of excessive thyroid hormones during treatment, thereby suppressing thyroid stimulating hormone (TSH) via negative feedback mechanism.[9]The aetiology of

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radiation- induced acute injury to the thyroid includes autoimmune reactions, parenchymal cell and vascular damages.[2] Thyroid damage is initially manifested within 6 months.[10] The peak incidence of primary hypothyroidism occurs 23 years after treatment, with approximately 50% of these events occurring within the first 5 years of radiotherapy.[2] There is difference between the way the thyroid gland response to intrathyroidal irradiation and external beam radiation. No latent period is usually observed from patient who had intrathyroidal thyroiditis as is most often immediately after ablation,[11] while in the case of external beam irradiation ranges from 2 months to years.[12] However early thyroiditis as low as 2 weeks with external beam has been documented.[5,8]

The contribution of chemotherapy to hyperthyroidism is unknown; to the best of our knowledge no reports of hyperthyroidism induced by the chemotherapeutic agents used in these patients have been published but radio-sensitization of normal tissues, however, is a well-known phenomenon of many chemotherapy agents.

Adequate management of thyrotoxicosis, or its more serious subcategory of thyroid storm, depends on successful diagnosis and the use of medications to block the production and effects of thyroid hormone. Inhibition of new thyroid hormone production with propylthiouracil or methimazole, inhibition of thyroid hormone release with stable iodide like Lugol's solution,

-Adrenergic blockade, and acetaminophen as an antipyretic are beneficial. Glucocorticoids, i.v. fluids and other supportive measures are used as clinically indicated.[13]

It has been recommended that patient treated with radiotherapy for head and neck cancers should have thyroid assessment on follow up.[4]

Conclusion

Hyperthyroidism is not common after irradiation of the head and neck but can occur. Treatment is basically similar to hyperthyroidism from other causes. Routine thyroid examination and thyroid function test is recommended immediately after treatment and on follow up.

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ACUTE ACCIDENTAL HALOPERIDOL POISONING IN CHILDREN: A CASE REPORT IN TWO SIBLINGS

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INTRODUCTION

Haloperidol is an anti-psychotic belonging to the group of Butyrophenone neuroleptics.[1] It is used more commonly in adults for the management of various psychotic disorders while in children it has been used for the control of behavioural and hyperactivity disorders.[1,2]Haloperidol's actions include blocking dopaminergic, histaminic, muscarinic and serotonergic receptors.[1] Toxicity may manifest with extrapyramidal symptoms, cardiac arrhythmias and even altered consciousness.[1,2,3]Reports of accidental poisoning and toxicity are limited especially in Africa. We therefore present a report of accidental haloperidol poisoning in two siblings whose father was on treatment with anti-psychotic medications.

CASE REPORT

The first child was a 3year old female who presented in the EPU with difficulty in breathing, abnormal neck posturing, associated with neck stiffness and upward rolling of the eyes for 6hours followed by altered consciousness of 4hours duration. These symptoms started about 10hours after ingestion of the drug. She was reported to have ingested 4 tablets (5mg each) of haloperidol taken from the pocket of the father's coat which was hung on the handle of the cupboard in the bedroom. The father had been receiving treatment for a mental illness for the past three years in another hospital. The mother also reported that his medications were usually not properly stored and indeed, he didn't want the children brought to the hospital at the onset of symptoms. She was second of three children, others siblings were aged 5years and 1year. On examination, she was unconscious with Glasgow coma score of 8, the pupils were normal, with global hypertonia and hyper-reflexia. Respiratory rate was 18/min, oxygen saturation using pulse oximetre was normal, with a pulse rate of 104/min, blood pressure-120/70mmHg (hypertension). She weighed 12kg. The rest of the examination was normal. The blood glucose was 4.9mmol/L; urinalysis and electrolytes, urea and creatinine were also within normal limits. ECG showed prolonged QTc interval of 0.50seconds. She received IV 4.3%dextrose in 0.18 saline and trihexyphenidyl 2mg 12hourly via nasogastric tube, urinary bladder was catheterized and urine output was adequate. Patient regained full consciousness within 12hours with BP of 95/65mmHg.

The second (older) sibling was aged 5years and male. He presented 8hours after the first child with excessive sleep of 20hours duration, deviation of the mouth and abnormal posturing for an hour. He had ingested 5mg (1 tablet) of Haloperidol also taken from his father's pocket while playing with his younger sibling. At presentation, he had torticollis, normal pupils but increased tone in all limbs with exaggerated deep tendon reflexes and sustained ankle clonus. Pulse rate -120/min, blood pressure -140/90mmHg (hypertension), respiratory rate - 24/min with normal oxygen saturation using pulse oximetry. He weighed 19kg. ECG showed short PR interval with inverted T waves in leads V1, V2. He received one dose of trihexyphenidyl2mg and IV Diazepam 0.2mg/kg. Symptoms resolved completely within 6hours.

They were discharged after 48hours. Both parents were counseled on child safety. At follow up after two weeks, both siblings were stable.

DISCUSSION

Both children had extrapyramidal symptoms and evidence of cardio-toxicity resulting from accidental ingestion of 1.67mg/kg and 0.26mg/kg of haloperidol for younger and older siblings respectively. A systematic review of anti-psychotic toxicity in children[4] estimated

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the toxic dose of haloperidol as 0.15mg/kg; much lower than the ingested dose in both children. The younger sibling who ingested a higher dose was unconscious at presentation; however both demonstrated extrapyramidal symptoms to varying degrees. Presentation after ingestion of the drug was delayed by 16 and 31 hours in younger and older siblings respectively.

Before 1978, there were no reports on acute haloperidol poisoning in children,[5] however Sinaniotis et al [5] observed that in view of its use in ambulatory patients, it could be left unguarded and thereby present a danger to children. Thereafter, emerging reports [3, 6,7] have described extrapyramidal reactions, hypotension (usually early) or hypertension and impaired consciousness as some of the major features of haloperidol toxicity described in children. These features were present in the siblings. Dry mouth, blurring of vision and urinary retention are known anti-cholinergic adverse effects.[7] Cardio-toxicity may manifest as tachycardia, hypotension or hypertension, cardiac arrhythmias or cardiac arrest.[7] Both siblings had hypertension and conduction defects.

Treatment modalities for haloperidol ingestion include anti-parkinsonism agents and supportive care.[3,7] Drugs that have been used include beperidine, promethazine and trihexyphenidyl among others.[3,7] Most cases resolve with good supportive care. Our patients responded well to trihexyphenidyl. Bae et al[8] emphasized that when administering anti-psychotics to patients living with young children, family education to prevent unintentional anti-psychotic poisoning is essential. Our cases ingested haloperidol from their father's coat while playing and may have mistaken it for sweets; as such, adequate family counseling and child safety measures are paramount towards prevention of poisoning.

Key words: Haloperidol, poisoning, children, siblings

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