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PATIENT OF PITUITARY MICROADENOMA PRESENTING WITH CUSHING DISEASE

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ABSTRACT

Cushing's syndrome is characterized by signs and symptoms that result from prolonged exposure to excessive plasma corticosteroids. While the most common cause is iatrogenic from medically prescribed corticosteroids, endogenous Cushing's syndrome is a relatively rare disease.

KEYWORDS: Microadenoma, Cushing's syndrome, dexamethasone

Cushing's syndrome is caused by the over production of cortisol by the adrenal glands (Bansal *et al.*, 2015). This can be caused by a tumor of the adrenal glands, the lungs, or the pituitary gland. When the tumor produces too much ACTH, it causes over production of cortisol by the adrenal glands. If the source is the pituitary, it is called Cushing's disease (Gardner, 2007). Common features of Cushing's disease are weight gain, hypertension, diabetes, poor short-term memory, irritability, excess hair growth (women), red-ruddy face, extra fat around the neck, round face, fatigue, poor concentration, and menstrual irregularity in addition to muscle weakness. Some of the less common features include insomnia, recurrent infection, thin skin and stretch marks, easy bruising, depression, weak bones, acne, balding (women), hip and shoulder weakness, violaceous striae, hypokalemia, unexplained osteoporosis, diabetes mellitus, and swelling of feet/legs (Nieman and Swearingen, 2013).

The diagnosis for Cushing's disease is made by laboratory testing, which demonstrates the consistent overproduction of cortisol. The tests most commonly used are midnight salivary cortisol test, a 1 mg dexamethasone suppression test, or a 24-h urine-free cortisol level (Bansal *et al.*, 2015) (Nieman and Swearingen, 2013). All of these tests are approximately 92% accurate (2015, personal communication by Dr. Mary Lee Vance). A pituitary protocol magnetic resonance imaging (MRI) is also done to see if there is a visible tumor, if the blood ACTH level is detectable or elevated. Approximately 50% of patients with Cushing's disease have tumors which are visible on MRI (Bansal *et al.*, 2015) (Nieman and Swearingen, 2013). The diagnosis of a hormone-secreting pituitary tumor is of concern because of associated morbidity and premature mortality (Aron, 1995) (Klibanski and Zervas, 1991).

CASE REPORT

The patient is a 45-year-old male who presented to BPS Government Medical College of women with a history of generalized swelling since 3 months. Patient gave history of weight gain and fatigue too. He denied changes in mood, depression, sleep disturbance, or symptoms of sleep apnea. On examination facial plethora was observed. Other significant clinical findings include central obesity, easy bruising and buffalo hump.

Laboratory testing showed serum cortisol value of 58.01 (normal is 6.2-19.4), an overnight dexamethasone suppression test of 1467 nmol/L and a low dose dexamethasone suppression test of 1332 nmol/L (<50 nmol/L), ACTH levels were 65.3 pg/ml (normal range 7.2-63.3 pg/ml). MRI revealed nodular lesion measuring approx. 5.8*4.3 mm on right side of the anterior pituitary gland, showing differential/ delayed enhancement on post contrast study along with deviation of infundibulum towards left side- suggestive of pituitary microadenoma. As such, a diagnosis of ACTH-dependent Cushing's disease was made.

Ultrasonography for bilateral kidneys and adrenals showed kidneys normal in size and echotexture, no mass was seen in suprarenal region. Thyroid profile showed hypothyroid state with TSH 0.1 uIU/mL (normal 0.3-4.3 uIU/ml), Free T_3 2.4 pg/ml (normal 2.4-4.2 pg/ml) and Free T_4 (normal 0.7-1.3 ng/dl). Routine urine microscopy and culture were negative. Liver Function test were otherwise normal except mild elevation in

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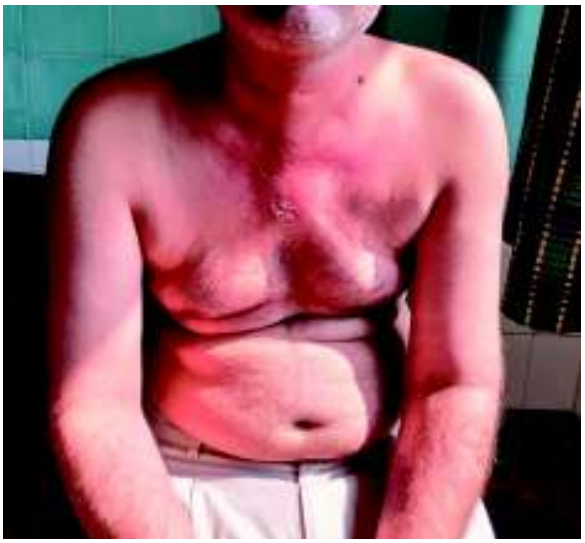
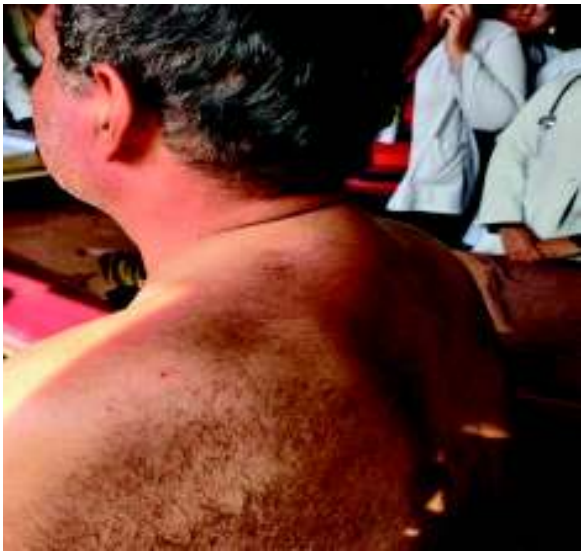
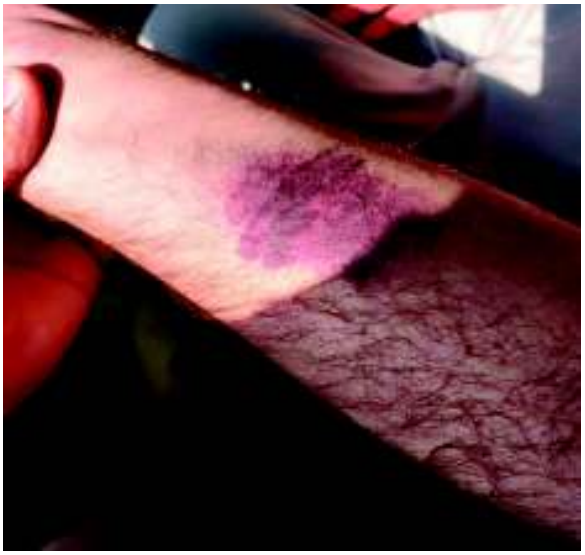
serum cholesterol levels. Serum electrolytes and CBC were in normal range.







DISCUSSION

While many of the signs and symptoms of Cushing's syndrome are nonspecific, those features that best distinguish Cushing's syndrome are proximal muscle weakness, facial plethora, easy bruising and purple (violaceous) striae (Nieman and Swearingen, 2013). The often-prominent skin findings reflect the hypercatabolic effects of hypercortisolism inhibition of epidermal cell division and collagen synthesis, resulting in thinning of the stratum corneum and loss of subcutaneous fat (Aron, 1995). Skin atrophy may be prominent and the loss of subcutaneous connective tissue results in easy bruising after minimal injury. The atrophy and disruption of collagenous subcutaneous fibers lead to the development of broad, purple striae because the increasingly thin skin does not hide the color of venous blood in the underlying dermis. Another skin finding is hyperpigmentation due to excess ACTH, which is most commonly seen in ectopic ACTH syndrome, less commonly in Cushing's disease (i.e., pituitary-secreting ACTH tumor) and never in adrenal Cushing's syndrome; is the hyperpigmentation a result of ACTH binding to melanocyte - stimulating hormone receptors.

In a review of Cushing's syndrome, Findling and Raff, 2005 noted that the diagnosis of Cushing's syndrome "is the most challenging problem in clinical endocrinology." Patients with Cushing's syndrome and persistent hypercortisolism have a 4–5 times excess mortality compared to the general population, highlighting the urgency of diagnosis. They found that general practitioners were consulted 76% of the time, endocrinologists 25%, gynecologists 24%, psychiatrists/ psychologists 12%, rheumatologists 11% and dermatologists 8% of the time.

Cushing's is a challenging disease to diagnose. The diagnosis is often delayed because Cushing's is frequently masked by its overlap with more common medical problems such as diabetes, high blood pressure, obesity, and polycystic ovary syndrome. Cushing's may be more common than previously thought. Some patients exhibit very few symptoms clinically but have testing, which confirms Cushing's. Other patients have many of the clinical symptoms of Cushing's and are very ill by the time they are diagnosed. Because of the damage hypercortisolism does to the body including muscles, joints, and bones, recovery is often painful and challenging.

CONCLUSION

Cushing's is difficult to diagnose and increases morbidity and mortality in patients who are untreated.

Difficulty in diagnosis is due to the significant number of varied pathologies indicated by its signs and symptoms. This is an interesting case of Cushing's disease as the level of cortisol measured in the patient was high and shown with symptoms of Cushing's syndrome along with MRI findings of pituitary macroadenoma.

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