RADIOLOGICAL DIAGNOSIS OF THREE CASES OF CUSHING'S SYNDROME

by

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Introduction

Due to lack of facilities to detect urinary excretion of corticosteroids and to estimate plasma cortisol special radiological examination following routine x-rays of the patients was the only reliable guide to reinforce the clinical diagnosis of Cushing's syndrome.

Diagnostic criteria

Clinical diagnosis was based on history, physical examination, radiological examination of the lungs, abdomen and skull followed by intravenous pyelography. Routine laboratory investigations were done. Presacral air insufflation around the kidneys and suprarenal glands was done as the reinforcing diagnostic tool to support the diagnosis. Histological examinations of the tumours were done in the first two cases after adrenalectomy to confirm the diagnosis.

Method to do presacral air insufflation

The patient was laid prone. Taking all the routine aseptic precaution the lowest fixed point of the sacrum was felt a little above the anus. After the application of local anaesthesia 5cc of normal saline was pushed inside in the fatty layer behind the lower rectal region to displace the part anteriorly. A long thin needle was inserted through a point just below the lower fixed point of the sacrum into the fatty layer behind the lower rectal region and the position of the tip of the needle was checked by a lateral x-ray of the part. The head end of the table was then tilted 30-to 45 degrees up. Through a pack of sterile gauze around the nozzle of a syringe of 50cc atmospheric air was drawn inside and this air was pushed through the needle. This process was repeated to push in 500 cc of air. Fluoroscopy was done to check to delineate the upper poles of the kidneys and

the suprarenal glands. The first case needed 800cc of air whereas the second and third cases needed 1000cc each. After removing the needle few x-rays of the suprarenal regions were taken under fluoroscopic control. Tomography of the suprarenal regions was helpful for further delineation. This was done in the second case.

Cases and results

Case No. 1

Mr. T of 22 years of age of Banepa was readmitted on 2026.5.17 for his complaint of excessive putting on of weight for over a year. On examination he had moon face, buffalo bump and pink striae over the abdomen. His blood pressure was 210/110mm Hg and pulse rate was 90/min. His blood examination showed the following results.

R.B.C. 5.25 millions/cmm.
Haemoglobin 13.2G/100cc.
P.C.V. 44%
W.B.C. 13000/cmm.
Polymorphs 76%
Lymphocyte 24%
Eosinophil nil.
Monocyte nil.
Basophil nil.
Bleeding time 1 minute.
Clotting time 5 minute.

Other laboratory investigations showed the following results.

Blood sugar 133mg/100cc.
Blood urea 44mg/100cc.
Serum cholesterol 390/100cc.
Liver function test:-
Total protein 7.4G/100cc.
C.C.F.T negative.
Urine:- normal.

Plain x-rays of his chest, abdomen and skull showed no abnormality. I.V.P. was normal. Presacral air insufflation around the kidneys and suprarenal regions was done and x-ray diagnosis of left sided suprarenal mass, possibly suprarenal cortical adenoma, was suggested. On 2027.5.27, left sided adrenalectomy was done. Histology of the adrenalectomy mass confirmed suprarenal cortical adenoma. The patient was discharged a month later with B.P. recorded as 140/100mm Hg.

Fig. I.

Fig. II

Case No. 2.

Mrs M.D. of 32 years of age, of Bhainsikhola was admitted on 2027.7.25. for her complaint of swelling of her body including abdomen for six years, and giddiness for six months. On enquiry about her menstrual cycle she complained that her menstruation had stopped for six years.

On examination she had moon face, buffalo hump and pink striae over her abdomen. Her B.P. was 130/100mmHg. and her pulse rate was 80/min. Her blood examination showed the followings.

R.B.C.	5.1 millions/cmm.
Haemoglobin	12.2G/100cc.
P.C.V.	33%
E.S.R.	111mm first hour.
W.B.C.	7500/mm.
Polymorphs	78%
Lymphocytes	14%
Eosinophil	8%
Monocytes	nil.
Basophil	nil.

Other laboratory investigations showed the following:

Blood sugar	280 mg/100cc.
Blood urea	14 mg/100cc.
Urine sugar	++++
Eye examination showed R V 6/9 and L V 6/9.	

Plain x-rays of her chest, abdomen and skull showed no abnormality I.V.P. was normal.

On 2027.8.5. Presacral air insufflation was done and x-ray diagnosis of left sided suprarenal mass, possibly suprarenal cortical adenoma was suggested. Leftsided adrenalectomy was done. Histology of the adrenal tumour mass confirmed suprarenal cortical adenoma. The patient was recovering well after the operation; but on the 35th day of operation the patient had some fever followed by diarrhoea in the morning. The patient collapsed within a matter of minutes. Her B.P. fell down very sharply and she died. Her death was possibly due to adrenal crisis.

Case No. 3.

Mrs. K. of 35 years of age of Dhorpatan was admitted on 2027.8.7 for considerable swelling of her body, mostly abdomen for 3 years. On enquiry she complained that her

menstruation had stopped for 3 years. On examination she had moon face, buffalo hump and doubtfully pinkish striae over the abdomen. She had marked impairment of vision on both sides. She had severe mental depression. Her blood pressure was high (240/120mm Hg.)

Her blood examination showed no abnormality. Her blood sugar was normal. X-rays of her chest, abdomen and skull were normal. Her I.V.P. was normal. Presacral air insufflation showed a left-sided adrenal mass, possibly a suprarenal cortical adenoma but this could not be confirmed histologically as the patient's husband refused to get her operated.

Discussion

Welbourn, R.B., Montgomery, D.A.D., and Kennedy, T.L. in their analysis of 60 patients of Cushing's syndrome had 46 cases with benign lesion and 14 cases with malignant tumours of the pituitary body, adrenal gland or the bronchus. Out of the 46 cases of benign lesion 37 cases had adrenal hyperplasia and 9 cases had pituitary adenoma. In their series none of the cases had a suprarenal cortical adenoma. Lang, E.K. in his series of 161 cases of suprarenal masses 12 cases had suprarenal cortical adenomata. In our 3 cases of Cushing's syndrome 2 cases had suprarenal cortical adenomata and the third case could not be confirmed histologically. It is really surprising to have 2 cases of suprarenal cortical adenomata in the three cases of Cushing's syndrome.

It is rather interesting to compare some of the clinico-laboratory findings of these three cases with those of the cases of Welbourn, R.B. et al.

1. All the three cases had arterial hypertension.
2. The first two cases had diabetes mellitus.
3. The third case had severe mental depression.
4. Sexual functions were impaired in both the female cases who had amenorrhoea for years.
5. The third case had marked impairment of vision.
6. The second case had diarrhoea with some fever on the 35th day of operation when she died.

In the series of Welbourn, R.B. et al

1. 93% had arterial hypertension.
2. 40% had cardiovascular lesion.
3. 29% had diabetes mellitus.
4. 40% had hypokalaemia.

5. 47% had osteoporosis.
6. 20% had severe mental abnormality, mainly depression.
7. Sexual functions were impaired in most cases.
8. There were few pre-puberal boys and girls.
9. Some developed temporary psychiatric symptoms after operation.
10. Two patients developed postoperative infection e.g., meningococcal meningitis, of whom one died of encephalitis.

Conclusion

It was surprising to find two cases of suprarenal cortical adenomata in the three cases of Cushing's syndrome. The third case could not be confirmed histologically, although radiological diagnosis was a case of suprarenal cortical adenoma of the left side. It was quite an interesting feature to find the suprarenal cortical adenomata on the left side in all the three cases.

Acknowledgements:

I thank the Medical Superintendent of the Bir Hospital for allowing me to publish this paper. I thank Mr. Laxman Man Pradhan, Acting Senior Radiographer, X-Ray Dept., Bir Hospital who helped me while doing Presacral air insufflation. My thanks are due to Dr. Y.B. Shrestha, Senior Paediatrician, Kanti Hospital, Dr. S.K. Pahari, Senior Physician, Bir Hospital, Dr. S.K. Dixit, Honorary Visiting Physician, Bir Hospital, and Dr. S.M. Shrestha, Physician, Bir Hospital for referring their cases for my opinion and Presacral air insufflation. I also thank Dr. A.K. Sharma, Royal Surgeon, Senior Surgeon and Head of the Dept. of Surgery and Dr. M. Shah, Senior Surgeon, both from the Bir Hospital, for operating on the two cases. Lastly but not the least I thank Dr. V.L. Gurubacharya, and Dr. B.R. Prasai, Pathologists of the Central Health Laboratory for doing histological examination of the suprarenal tumours.

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