Changes of Various Dehydrogenases in Human Adrenal Glands

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3-beta hydroxysteroid dehydrogenase (3β-HSD), glucose-6-phosphate dehydrogenase (G6PD), 6-phosphogluconate dehydrogenase (6PGD), lactate dehydrogenase (LDH) and succinate dehydrogenase (SD) were stained in human adrenal glands.

Materials: Normal-2 cases, hyperplasia-2 cases (secondary aldosteronism and Cushing's syndrome), adenoma-5 cases (all-primary aldosteronism).

Each enzyme plays different roles in the adrenal steroid production. Accordingly, enzymes were divided into three groups as follows;

- Group 1: 3β-HSD
- Group 2: G6PD and 6PGD
- Group 3: LDH and SD

3β-HSD showed no marked change of the staining in both hypertrophy and adenoma. (Fig. 1, 2 and 3)

Group 2 did not reveal marked changes in both of them.

Increased intensity of the staining of group 3 enzymes was observed in adenoma. (Fig. 4 and 5)

Distribution and intensity changes of the stainings of group 3 enzymes were seen in hyperplastic adrenal glands. (Fig 6 and 7)

It was also noted that the staining distributions were different in each adenoma.

Explanation of Figures

Fig. 1: 3β-HSD in normal adrenal gland.
Fig. 2: 3β-HSD in hyperplastic adrenal gland.
Fig. 3: 3β-HSD in adenoma of adrenal gland.
Fig. 4: LDH in normal adrenal gland.
Fig. 5: LDH in adenoma of adrenal gland.
Fig. 6: LDH in hyperplastic adrenal gland (Secondary Aldosteronism).
Fig. 7: LDH in hyperplastic adrenal gland (Cushing's Syndrome).
Histochemical and Electron-microscopic Observations on Biopsy Materials of the Human Adrenal Glands

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The human adrenal cortex consists of the cells of the zona glomerulosa, the clear cells of the zona fasciculata and the compact cells of the zona reticularis. Morphological characteristics of these three types of the cells have been described by Symington and his group.

In the present study more details of the histochemical and electron-microscopic investigations in three types of the cortical cells were reported on biopsy materials of the human adrenal cortex.

Materials and Methods

Biopsy specimens of the adrenal glands were obtained from 15 patients at operations for the wandering kidney, renal stones, tuberculosis, tumors and renal hypertensions. The adrenals were fixed in 1% osmium tetroxide, embedded in methacrylate and sectined on a JUM-5 ultramicrotome. The sections were stained with Millonig's method and examined on a JEM-T5 microscope.

The remaining adrenal tissues were briefly fixed in Baker's formol-calcium