SUMMARY AND CONCLUSION

This retrospective study included 113 patients (61 male and 52 female) were admitted to Mansoura Urology and Nephrology Center between 1985-2002. This study gives an update of pathological and immunohistochemical findings in several adrenal tumor entities, and provides guidelines for the diagnosis of these tumors in the light of recently published data.

All patients were surgically treated by adrenalectomy. The histopathological examination revealed 28 cortical adenoma (24.7%), 12 cortical carcinomas (10.6%), 39 pheochromocytomas (34.5%), 13 neuroblastomas (11.5%), 12 ganglioneuroblastomas (10.6%) and nine ganglioneuroma (7.9%). Patients with adenoma were followed for a period ranging from 24-67 months. There were clinical and laboratory improvement of adenoma group.

- Nine patients of carcinoma died of distant metastases after 8 months and the other 3 patients were still alive 24 months after surgery.
- In pheochromocytomas, 33 patients became normal after 24 hours, the other 6 died from distant metastases.
- 6 patients with neuroblastoma and ganglioneuroblastoma were still living after adrenalectomy, while other 19 patients received chemotherapy and non-living after 24 months.
- Nine patients with ganglioneuroma are still living after adrenalectomy.

All prepared slides stained with periodic-acid Schiff reaction (PAS) and reticulin stains. Hyaline globules which (PAS) positive were detected in adrenal cortical adenoma and adrenal cortical carcinoma

and pheochromocytomas, while not detected in neuroblastoma groups. All tumors were positive for reticulin stain.

Immunohistochemical studies:

All cases of adrenal tumors were examined immunohistochemically using antibodies against cytokeratin (epithelial marker) and vimentin (mesenchymal marker) for adrenal cortical tumors and against chromogranin A, S-100 protein and neuron-specific enolase for adrenal medullary tumors.

Cytokeratin was expressed in 22/28 adenoma and all cases 12/12 adrenal cortical carcinoma. Vimentin was expressed in 20/28 adrenal cortical adenoma and 8/12 adrenal cortical carcinoma. Chromogranin A was expressed in all cases (39/39) pheochromocytoma, 5/13 neuroblastoma, 7/12 ganglioneuroblastoma and 7/9 ganglioneuroma.

S-100 protein was expressed in 32/39 pheochromocytoma, 9/13 neuroblastomas, and all cases of ganglioneuroblastoma and ganglioneuroma. Neuron-specific enolase was expressed in all cases of pheochromocytoma, neuroblastoma, ganglioneuroblastoma and ganglioneuroma.

I-Adrenal cortical tumors:

1. Mitosis and necrotic materials were observed only in adrenocortical carcinoma.

2. Cellular atypia or pleomorphism and the degree of cohesiveness were unreliable criteria in differentiating between adrenocortical adenoma and carcinoma.

3. Nuclear pleomorphism and prominent nucleoli were observed predominantly in adrenal tumors.

4. Reticulin staining is useful for the diagnostic differentiation of adrenal cortical carcinoma from adrenal cortical adenoma.

5. The expression of cytokeratin and vimentin are helpful but the basic methods remain the histopathological examination of paraffin sections.

6. No significant correlation between immunohistochemical pattern of adrenocortical tumors and survival.

II-Adrenal medullary tumors:

The neuroendocrine tumors stained with high specificity and sensetivity for the neuroendocrine maekers, chromogranin A and neuron-specific enolase.

a- Pheochromocvtoma

1- Histomorphologically feature of benign and malignant pheochromocytomas may be similar.

2- Pan-neuroendocrine markers (chromogranin A, neuron-specific enolase) are useful in diagnosis of pheochromocytoma.

3- Frequency of S-100 protein positive sustentacular cells is high in benign pheochromocytomas and low in malignant pheochromocytoma.(our result suggest that S-100 immunostaining is a useful marker to predict malignant behavior in pheochromocytoma.

4- Intensity of neuron-specific enolase may be similar in both benign and malignant pheochromocytoma.

5- No significant correlation between expression of chromogranin A and neuron-specific enolase in pheochromocytoma and survival.

b- Neuroblastomas:

1- The features of histopathological changes are the most important basis to make diagnosis for neuroblastomas group.

2- Immunohistochemical staining can verify it further and play an important role in its differential diagnosis. The neuroendocrine tumor stained with high specificity.