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1) A Case of Cancer of the Ear

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The patient, 70 years old farmer, was admitted to our clinic because of bloody ear discharge and ear pain on the left side on July 1, 1966. He has complained of repeated ear discharge and hearing loss on both sides, especially on the left side, for about 35 years. He had bloody ear discharge on the left side at the end of January, 1966. Two months later, left ear pain radiated to the occipital region was appeared. He has never had vertigo and facial paralysis.

On admission, physical examination revealed normal, except slightly extended cardiac dullness to the left side and accentuation of the second aortic tone. On local examination, there was pulsating purulent discharge with foul smelling in the left auditory canal. The posterior wall of the left external bony auditory canal was swollen with a small erosion. The left perforated drum was partially visible. There was slight left facial weakness. Hearing test showed about 60 db air conductive loss on both sides. X-ray film of the mastoids revealed apneumatization with on evidence of bony destruction. The vestibular function test revealed normal. Laboratory findings were within normal limits.

He was performed on radical mastoid operation on the left side under the diagnosis of chronic otits media on the left side on the fifth hospital day. There was the fibrous mucous membrane in the antrum and proper tymapanic cavity. It was closely adhered to the bony wall of the prope tympanic cavity. The ossicles were almost gone. The swollen tissue of the posterior wall of the external auditory canal extended to the hypotymapanic cavity and the surface of the bony wall of the hypotymapanum and the posterior wall of the external auditory canal was rough and caries. Postoperatively, a total of 7600 r. with use of Betatron was given over the left ear and mastoid.

The histological findings of the tissue which was taken from the posterior wall of the external auditory canal revealed squamous cell carcinoma.

Malignant tumor of the ear is very rare in occurence, so that most otologist do not consider ear malignancy and frequently performe on radical mastoid operation under the diagnosis of chronic otits media. I suggest that otologist must remember in his mind the precense of this rare but malignant disease

seeing the patient with bloody ear discharge, ear pain and ear growths which was the most suggestivel symptome of ear malignancy.

2) Two Cases of Dandy-Walker Syndrome

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Dandy-Walker syndrome is a congenital malformation due to the atresia of the foramens of Magendie and Luschka, characterized by cystic dilatation of the fourth ventricle and agenesis of the cerebellar vermis. Recently we experienced two cases of this disease, one of which was the typical infantile form and the other was atypical case.

The first case was 7 month-old male baby who had advanced hydrocephalus and other malformations in the heart and a lobule of the ear. Emergency lateral ventriculostomy with a controlled CSF drainage was performed on the day of admission. Although symptoms were improved and seemed to regain vitality for the first postoperative week, he expired on the 10th hospital day. Autopsy revealed the huge cyst in the posterior fossa, atresia of the outlets of the fourth ventricle, marked hypoplasia of the cerebellar hemispheres and total absence of the cerebellar vermis.

The second case was 9 year-old girl. On admission, she was appeared to be stuporous. For 9 months prior to admission, cerebellar and bulbar symptoms developed progressively. Myodil ventriculography indicated the filling deffect around the fourth ventricle. Suboccipital craniectomy revealed an arachnoid cyst protruding into the cisterna magna from the foramen of Magendie and absence of the cerebellar vermis. She died 5 days after subsequent lateral ventriculostomy from suppurative meningitis. On autopsy, agenisis of the vermis of the cerebellum and atrophy of the pons were verified.

There have been several theories concerning the pathogenesis of Dandy-Walker syndrome. However, the most reasonable explanation of the pathogenesis of this condition was given by Gardner et al. They suggested that the varied pathological entities which cause hydrocephalus such as Arnold-Chiari malformation, Dandy-Walker syndrome, and arachnoid cyst of the cerebellum are sole varying expressions of embryonal atresia of the fourth ventricle. According to their hydromyelic theory, shortly after the closure of the neural tube at the fifth embryonal week, the choroid plexus begins to pour fluid into this closed cavity and results in the enlargement of the cavity. This enlargement will be compensated by outflow of the fluid out of the cavity by increased permeability of the rhombic roof, and subsequent absorption at the subarachnoid space. If

the membrane is sufficiently elastic, it will stretch to form diverticulum of the fourth ventricle which may herniate through the foramen magnum and forms Dandy-Walker syndrome. If inelastic, the hind brain itself will herniate and forms Arnold-Chiari malformation. If the occluding membrane splits into two layers, fluid may collect between them and forms so called arachnoid cyst of the cerebellum. Our two cases are satisfactory to above criteria, though the second case is thought to be mild form of diverticulum of the fourth ventricle.

Dandy-Walker syndrome is effectively treated by a combination of the sub-occipital decompression and the ventriculoatrial shunt. If it is treated early, improvement of the symptoms may be expected.

3) The Trans-corneal Potential in Vitro

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The isolated cornea of the albino rabbit was mounted between two lucite chambers. Both the epithelial and the endothelial surfaces of the cornea were exposed to the bathing solution through the holes in the chambers. The potential difference across the cornea was measured with Ag-AgCl electrodes. The tests were made on 33 corneas.

When the cornea was bathed with normal Ringer solution on both surfaces, the potential difference was from 1 to 6 mV. in 21 corneas, and more than 6 mV. in 12 corneas. The endothelial side was always positive in reference to the epithelial side. The potential difference was maintained steadily for more than 3 hours. To test the effects of ions on the potential difference, the bathing solution in the chambers was exchanged with modified Ringer solution.

In choline-Ringer solution, in which 125 mM. choline coloride was substituted for equimolar NaCl, the potential difference was reduced in all of 8 corneas tested. The values in the solution were less than 1.0 mV. in 6 corneas out of 8. Choline-Ringer solution produced the effect when it bathed the epithelial surface of the cornea, but it had no effect from the endothelial surface.

In high potassium-Ringer, in which 20 or 40 mM KCl was substituted for NaCl, the potential difference was also decreased. High potassium-Ringer solution, however, was effective from the endothelial surface of the cornea, but not from the epithelial surface. The higher the concentration of potassium ions in the solution, the greater was the decrease of the potential difference. These results were observed in all of 22 corneas tested.

The effects of choline-Ringer and high potassium-Ringer solutions were reversible. Thus the different behaviours of the epithelial and the endothelial

surfaces of the cornea to sodium and potassium ions were demonstrated.

4) Cicatricial Stenosis of the Esophagus due to Hydrochloric Acid Burns

— Report of a case and Dilatation Technique —

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It is well known that the most cause of cicatricial stenosis of the esophagus is the swallowing of chemical poisons, such as caustic alkalis, concentrated acid and heavy metal salts.

Above all, it is important to manage cicatricial stenosis which developes as a healing process of corrosive esophagitis due to caustic.

Thus, a case of a cicatricial stenosis of the esophagus which developed after a femele, aged 19 years old swallowed about 40cc of hydrochloric acid in attempt at suicide, and a dilatation technique for management of the cicatricial stenosis of the esophagus using four ruffer tubes tied silk strings in slow progression of increasing sizes were reported.

5) Electron Microscopical Study on the Lamellar Structure in Protozoan Cells

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Since the fine structure of the Golgi complex in the cells of mouse epididymis was revealed electron microscopically in 1954 by Dalton & Felix (1), the similar structures have been observed in all metazoan cells, and they have been termed "Golgi complex". It was established by many workers that the Golgi complex is morphologically distinct from other membranous organelles of the cytoplasm and consists of an assemblage of small vesicles, larger vacuoles, and characteristic lamellar cisternae (2). In protozoan cells some workers have reported the same structural organelles (3, 4), but these organelles have not been identified with the Golgi complex. The identification of the classical Golgi apparatus has been based light microscopically on the phenomena that the apparatus contains the reduced metal deposits after osmium or silver impregnation. In conformity with this definition, the present studies employed the classical

methods for impregnation of the Golgi apparatus with osmium tetroxide and silver nitrate. In this study I will discuss whether these organelles may be identified with the Golgi complex because of their morphological resemblance and whether the organelle initially revealed by Dalton et al. and termed "Golgi complex" is corresponded to the electron microscopical image of the classical Golgi apparatus.

The colorless flagellate Chilomonas paramecium and the green flagellate Euglena viridis were used in this study. Osmium impregnation procedure used in this study consisted of fixing the materials in 1 % osmium tetroxide buffered with veronal-acetate followed by osmication in 1 % aqueous osmium tetroxide for from 45 to 200 hrs. at 37°C. For the silver impregnation test, the modification of that described by Da Fano was employed; that is, after a brief fixation, the material was impregnated in fresh 1.5 % aqueous solution of $AgNO_3$ in the dark for 40 mints. at room temperature. Thereafter, the material was reduced in Cajal's hydroquinone-formalin mixture in the dark for 1 hr., then dehydrated and embedded in Epon in th usual way.

The parabasal body of Chilomonas was morphologically quite similar to the characteristic lamellar complex termed "Golgi complex" in metazoan cells. In Euglena the same lamellar organelles were observed abundantly in the cytoplasm. The distribution of metal deposits after post-osmication of the two cell types studied was similar. In Chilomonas, the lamellar organelle (parabasal body) remained entirely free of the metalic deposits, while the small vesicles encircling the contractile vacuole contained conspicuously the deposits of osmium under the same conditions. After the silver impregnation the deposits of reduced silver were observed in the region around the contractile vacuole in which numerous, small vesicles were scattered, but never observed in the lamellar organelle. These results exactly coincided with the post-osmicated images. In Euglena, the distribution of metal deposits after post-osmication was similar to the case of Chilomonas; the lamellar organelles remained entirely free of the deposits of osmium, while near the contractile vacuole the definite region enclosed with the limiting membrane contained the metal deposits.

In the light of the classical definition, it is unsuitable to identify the lamellar organelle in protozoan cells used with the Golgi apparatus. It seems that Dalton et al. misinterpreted the lamellar organelle as the Golgi complex, because they regarded the classical Golgi apparatus as the distinct organelle in the cytoplasm. When you suppose the classical Golgi apparatus to be substance having no definite structure electron microscopically, you are easily able to realize that in the mouse epididymis used by Dalton et al., the Golgi substance localizes over or near the lamellar organelle, and nothing more.

REFERENCES

1) Dalton, A. J., and M. D. Felix : *Am. J. Anat.*, **94** : 171, 1954
2) Friend, D. S., and M. J. Murray : *Am. J. Anat.*, **117** : 135, 1965
3) Grasse, P. P., and N. Carasso : *Nature* (London), **179** : 31, 1957
4) Noirot-Timothèe, C. : *Compt. rend. Acad. Sci.*, **243** : 2847, 1557