

研 討 會 籌 辦

江 宏 主 任 (台北榮民總醫院病理檢驗部)

研 討 會 手 冊 編 輯

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中華民國比較病理學會

第十七次比較病理學研討會（中樞神經系統感染專題

II)

議程表

時間：中華民國八十八年十月三十一日（星期日）上午 08:30~中午 12:30

地點：台北榮民總醫院（第一會議室） 地址：台北市石牌路二段 201 號

主辦單位： 中華民國比較病理學會

協辦單位： 台北榮民總醫院

| 時 | 間 | 議 | 程 | 主 | 講 | 者 |
|--------------|---|-------------|---|---------------------|---|---|
| 08:30- 09:00 | | 報到 | | | | |
| 09:00- 09:20 | | 開幕致詞及頒獎 | | | | |
| | | Section 【1】 | | | | |
| 09:20- 09:40 | | Case 136 | | 紐約動物醫學中心 | | |
| 09:40- 10:00 | | Case 137 | | 國立中興大學獸醫學院 | | |
| 10:00- 10:20 | | Case 138 | | 國立台灣大學獸醫學系 | | |
| 10:20- 10:50 | | 休息(茶點) | | | | |
| | | Section 【2】 | | | | |
| 10:50- 11:10 | | Case 139 | | 花蓮慈濟綜合醫院 | | |
| 11:10- 11:30 | | Case 140 | | 屏東縣家畜疾病防治所 | | |
| 11:30- 11:50 | | Case 141 | | 台北榮民總醫院 | | |
| 11:50- 12:10 | | Case 142 | | 國立屏東科技大學獸醫學系 | | |
| 12:10- 12:30 | | 討論 | | | | |
| 12:30- 14:00 | | Luncheon 午餐 | | （中華民國比較病理學會理監事聯席會議） | | |

註：

1. 中華民國病理學會會員參加本次研討會可獲 4 個教育積分。
2. 報名表請洽公佈單位。
3. 有意參加者請於 88 年 10 月 25 日前將報名表寄回或傳真中華民國比較病理學會秘書處吳憲青先生收。電話：02-23630231 轉 2751 再轉 1402 傳真：02-23633289 地址：台北市舟山路 142 號 國立台灣大學獸醫學系。
4. 會場供應研討會講義、茶點與午餐。
5. 歡迎加入中華民國比較病理學會會員，申請入會請洽中華民國比較病理學會

秘書處吳憲青先生。電話：02-23630231 轉 2751 再轉 1402 傳真：02-23633289
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| 第一次至第十六次比較病理學研討會病例一覽表..... | |
| 第一次至第十六次比較病理學研討會病例分類一覽表..... | |
| 會員資料更新服務..... | |

**中華民國比較病理學會
第十七次比較病理學研討會
(中樞神經系統感染專題II)**

病 歷 摘 要

CP Case136 紐約動物醫學中心 (A33185)

An eight-month-old lory (*Lorius* sp.) was examined because of weakness, slight ataxia, cachexia, and candidal enteritis, with neutrophilia (WBC, 23,000), and anemia (PCV, 31%); the blood lead concentration was normal. The bird developed neurologic signs of falling to the left and head tilt to left; he mildly responded to treatment for lead poisoning. The bird was released on nystatin to treat intestinal yeast infection. Two months later the bird was reexamined because of nystagmus and worsening ataxia, but he was still eating and alert. Ten weeks later the bird was returned because of poor neurologic status, tremors, torticollis, and seizures, and he was released to home care. The bird died acutely during a violent seizure at home 10 weeks later.

CP Case 137 國立中興大學獸醫學院 (CSPP 011-3)

A 8-years old, 35.5Kg body-weight female Neopolitan was transferred to NCHU VTH, because of the dog had a 2-month history of progressive loss of balance and a tendency to topple toward right side, anorexia and depression. It was characterized by ataxia, tremor, nystagmus and even hemiparesis; all of the muscles on right side of the head revealed atrophy. All image of MRI were obtained with a 1.5-Tesla MR unit. Pulse sequences were chosen to emphasize T1 and T2-weight characteristics. The location of the tumor was almost in the right brain stem and extend to right cerebellum, left brain stem was also involved and the lesion was characterized as intraaxial. The mass affected shift the falx cerebri to left side and compressed the ventricular system moderately without hydroencephalus.

CP Case 138 國立台灣大學獸醫學系&台灣養豬科學研究所 (P98-177C&J)

This adult mixed male dog showed nervous signs, including walking aimlessly to hit the wall without turning direction. Dyspnea and murmur were noticed.

CP Case 139 花蓮慈濟綜合醫院 (A043-27)

A 25-year-old female who had suffered from abdominal fullness for 2 months visited our ER due to intermittently dull peri-umbilical pain, fever and vomiting for 3 days. Physical examination revealed moon face, pale conjunctiva, metallic bowel sounds, and tenderness over peri-umbilical area without rebound pain. Exploratory laparotomy was performed under the impression of intestinal obstruction but revealed no focal lesion. Seven days after the operation, the patient

presented a sudden onset of conscious disturbance, high fever and hypotension. Sepsis, azotemia and respiratory failure developed. Subsequently, routine stool examination disclosed some kind of pathogenic organism and pertinent medication was given. Unfortunately, the lady became bedridden with remarkable muscle atrophy, and her condition gradually deteriorated till her death, 2 months after the admission. Autopsy was done. The tissue section was taken from cervical cord.

CP Case 140 屏東縣家畜疾病防治所 (Q87-261)

This is a 9-day-old Holstein dairy calf had a history of anorexia and fever since 3-day-old, and had been treated with cefazoline, cefamandole, and Cefuroxime for three days. The signs improved for some days. However, at 8-day-old, the calf showed signs of fever, respiratory distress, lethargy, recumbency, nervous symptoms including convulsion, opisthotonos, and coma. Passive manipulations of the head produced sudden extension of the limbs. The calf died and was sent to our lab at 9-day-old for pathological diagnosis. Low colostral intake by the calf compared with the other calves was noticed.

CP Case 141 台北榮民總醫院 (A6766 J ; A6766K)

The patient, a 68-year-old male, was found to have insomnia, hallucination, loss of memory and occasionally mental confusion for 2 weeks. Four days before being transferred to the Veterans General Hospital, the patient was admitted to a community hospital where brain CT showed no abnormal finding. Blood chemistry were all within normal range. Blood routine done twice showed WBC was 9,130/cumm, 5,160/cumm with seg. 82.4%, 40.8% and eosinophils 28% respectively. When he was transferred to VGH at ER, the patient showed unclear consciousness, stiff neck and flaccid extremities. Body temperature was 37.6°C. Blood routine showed WBC 5,400/cumm with seg/lym/neu/eos; 70/12/6/10. CT scan was done and showed no significant finding. Lumbar puncture was done and CSF exam. Showed: Cell count 604/cumm with N/L:66/34 RBC 8/cumm. Sugar 38mg/dL protein 142mg/dL. Initial pressure 165mmH₂O and terminal pressure 65mmH₂O. 3 days after admission, repeated spinal tapping revealed CSF: Cell count 840/cumm with N/E/L: 12/46/35. RBC 16,640/cumm. Under the impression of meningitis, antibiotics, antiviral agents and corticosteroid were given. Unfortunately the patient developed cardiac arrest on the 5th hospital day. Although the patient's heart beat restored after resuscitation, the patient remained comatous and relied on respirator. He expired on the 10th hospital day.

CP Case 142 國立屏東科技大學獸醫學系 (SA88-554A)

The 14-day-old, Broiler chickens were presented to Tainan City Livestock Disease Control Center (台南市家畜疾病防治所) with signs of nervous disorder characterized by ataxia, downward retraction of the head, lateral twisting, rapid contraction and relaxation of the leg. The cerebellum were soften and swollen and the meninges were edematous. Minute hemorrhages were on the surface. Mortality is high.

Comparative Pathology Case 136

Contributor: Si-kwang Liu (劉錫光), DVM, Ph.D.

Pig Research Institute, Taiwan, ROC (臺灣養豬科學研究所)

Cornell Medical College, International Wildlife Conservation Center

The Animal Medical Center, New York, N. Y., USA (美國紐約動物醫學中心)

Clinical History: An eight-month-old lory (*Lorius sp.*) was examined because of weakness, slight ataxia, cachexia, and candidal enteritis, with neutrophilia (WBC, 23,000), and anemia (PCV, 31%); the blood lead concentration was normal. The bird developed neurologic signs of falling to the left and head tilt to left; he mildly responded to treatment for lead poisoning. The bird was released on nystatin to treat intestinal yeast infection. Two months later the bird was reexamined because of nystagmus and worsening ataxia, but he was still eating and alert. Ten weeks later the bird was returned because of poor neurologic status, tremors, torticollis, and seizures, and he was released to home care. The bird died acutely during a violent seizure at home 10 weeks later.

Diagnosis: Viral encephalitis, polymavirus infection

Gross Findings: At necropsy, the bird was 137 gm and 24 cm long. He was emaciated with very thin musculature. The subcutaneous fat was replaced by edematous gelatinous material. All visceral organs were pale. The crop, proventriculus, and gizzard were dilated. The brain was soft and edematous. Superficial vessels of the brain were dilated and tortuous.

Histopathologic Findings: The normal cerebellar architecture was replaced by round cellular infiltration, mainly of lymphocytes and plasma cells, particularly in and around the vessels. Numerous large vacuoles were seen in the parenchyma. Examination of cerebellar vessels revealed marked enlargement of the nuclei (karyomegaly) of the endothelia, subendothelial pericytes, and medial smooth muscle cells, infiltration of lymphocytes and plasma cells in the perivascular spaces, and proliferation of numerous, large nuclei in the adjacent parenchyma. The most consistent histological lesion was karyomegaly in the cerebellum. The large nuclei were lined by peripherally margined chromatin. The nucleoplasm ranged from clear and chromophobic to increasing degrees of faint-to-moderate basophilia with fine granularity and or vesiculation. Some nuclei were filled with a mass of relatively dense, homogeneous, finely granular, or transparent nucleoplasm, which could have

been considered inclusion bodies. There was hyperplasia of astrocytes in the parenchyma; most gemistocytic astrocytes contained various-sized nuclear vacuoles. Some of the nuclei were extremely large with thin nuclear membrane various-sized vacuoles or balloons in the cerebellar parenchyma.

In the spleen, sheathed-arterioles revealed endothelial hyperplasia with vacuolated karyomegalies, medial proliferation of smooth muscle cells, and infiltration of lymphocytes and plasma cells in the adventitia. Similar changes were seen in the proventricular arterioles.

Electron Microscopic Findings: Electron microscopic examination of the brain revealed intranuclear inclusions which contained virus particles of 40-50 nm in diameter, with peripheral margination of chromatin.

Discussion: Pathologic characteristics of the lesion in cerebellum correlated very well with the clinical neurologic signs. Histopathologically, examination revealed cerebellar necrosis, infiltration of lymphocytes and plasma cells, and extreme hyperplasia of cerebellar endothelia, pericytes, and astrocytes. The nuclei of affected cells were large and had marginated chromatin with clear, finely granular basophilic to amphophilic inclusions, identical to those of the liver, spleen, kidneys, feather follicles and heart of budgerigars with avian polyomavirus infection.(1,2,3). The virus commonly infects hand-fed parrots from 6 to 10 weeks old who have sudden onset of disease and die acutely because of acute hepatic necrosis and disseminated intravascular coagulopathy, but rarely have neurologic signs and lesions.

Karyomegalic changes with and without inclusions are commonly demonstrated in the histiocytes, macrophages, Kupffer cells and glomerular mesangial cells of parrots with the disease (1,2). In the bird of this report, virus infects astrocytes, endothelia and pericytes causes extensive hyperplasia and karyomegaly of the affected cells and vasculitis in the brain have not been reported, although endothelial karyomegaly and intranuclear inclusions have demonstrated in cerebral capillaries of a macaw with papovavirus infection (4).

Diagnostic Criteria:

1. Characteristic karyomegalic cells with panuclear inclusions
2. Intranuclear inclusions containing virus particles of 40 to 50 nm in diameter with peripheral margination of chromatin.

References:

1. Bernier G, Morin M, Marsolais G: A generalized inclusion body disease in the

budgerigar (Metopsittacus unguatus) caused by a papovavirus-like agent. Avian Dis 25:1083-1092, 1981.

2. Jacobson ER, Hines SA, Quesenberry K, et al: Epornitic of papovavirus associated disease in a psittacine nursery. J Am Vet Med Assoc 185:1337-1341, 1984.
3. Phelen DN: Virus. In Atman et al ed. Avian Medicine and Surgery Philadelphia, Saunders, pp 288-294, 1997
4. Liu SK, Hsu F, Lee CT: An Atlas of Cardiovascular Pathology. Pig Research Institute, Taiwan ROC, pp 185, 314, 1989

Comparative Pathology Case 136

Contributors: Jia-Wen Huang¹ (黃佳雯), MD; Hung Chiang¹ (江宏), MD; Su-Pen Yang² (楊素盆), MD

1. Department of Pathology and Laboratory Medicine, Veterans General Hospital-Taipei
2. Department of Internal Medicine, Veterans General Hospital-Taipei

Clinical History: The patient, a 68-year-old male, was found to have insomnia, hallucination, loss of memory and occasionally mental confusion for 2 weeks. Four days before being transferred to the Veterans General Hospital, the patient was admitted to a community hospital where brain CT showed no abnormal finding. Blood chemistry were all within normal range. Blood routine done twice showed WBC was 9,130/cumm, 5,160/cumm with seg. 82.4%, 40.8% and eosinophils 28% respectively. When he was transferred to VGH at ER, the patient showed unclear consciousness, stiff neck and flaccid extremities. Body temperature was 37.6⁰C. Blood routine showed WBC 5,400/cumm with seg/Lym/neu/eos;70/12/6/10. CT scan was done and showed no significant finding. Lumbar puncture was done and CSF exam. Showed: Cell count 604/cumm with N/L:66/34 RBC 8/cumm. Sugar 38mg/dL protein 142mg/dL. Initial pressure 165mmH2O and terminal pressure 65mmH2O. 3 days after admission, repeated spinal tapping revealed CSF: Cell count 840/cumm with N/E/L: 12/46/35. RBC 16,640/cumm. Under the impression of meningitis, antibiotics, antiviral agents and corticosteroid were given. Unfortunately the patient developed cardiac arrest on the 5th hospital day. Although the patient's heart beat restored after resuscitation, the patient remained comatous and relied on respirator. He expired on the 10th hospital day.

Diagnosis: Eosinophilic meningitis caused by *Angiostrongylus cantonensis*

Gross finding: On autopsy, the brain showed marked postmortem change with generalized edema and meningeal congestion. Subarachnoid hemorrhage was seen over brain stem and left cerebellar hemisphere. Uncal and tonsillar herniation were present. On cut surface, Dura hemorrhage was seen in the pons.

Microscopic finding: The sections of the cerebellum show marked congestion and/or hemorrhage in the meninges. Inflammatory cells with conspicuous eosinophils are seen. The brain parenchyma is markedly autolyzed but edema and ischemic

change are still discernible. A few young adult worm of *Angiostrongylus cantonensis* which looked viable, are present in the exudate of meninges.

Discussion: Eosinophilic meningitis due to *A. cantonensis* occurs principally in Southeast Asia including Taiwan. Hundreds of cases have been reported from southern Taiwan. The life cycle of *A. cantonensis* involves its natural host, the rat, and intermediate hosts, snails and slugs. Human become infected by ingesting raw invertebrates containing third stage larvae or transport hosts-animals which become parasitized by eating infected mollusks. Transport hosts include a variety of land planarians, fresh water prawns, land crabs, and frogs. Raw fruits or vegetables contaminated by intermediate or transport hosts or possibly by their mucus serve as source of infection. Larvae of *A. cantonensis* are inherently neurotropic. Clinical manifestation develop after a period ranging from 2 to 35 days following infection. The disease presents usually as transient meningitis or, less frequently as a more severe disease involving the brain. In a series of 484 cases reported from Thailand, there is only one fatal case. However, in Taiwan, mortality rate is 3 and 3,2% in two series of 259 and 125 cases report, respectively.

The diagnosis of cerebral angiostrongyliasis requires examination of the CSF, and the finding of CSF is of cardinal importance. The CSF leukocyte count ranges from about 20 to 5,000 cell/cumm. CSF eosinophilia exceeds 10% in about 90% of cases.

Peripheral blood eosinophilia usually accompanies the eosinophilic CSF pleocytosis but may be milder. Since larvae of *A. cantonensis* have only rarely been recovered from the CSF antemortem, the diagnosis cannot depend on detecting and identifying the causative agent. ELISA serologic tests help confirm the diagnosis and the usual absence of focal lesion on CT scan helps distinguish it from cysticercosis or ganthosmiasis. Thus, the diagnosis is generally based on a clinical presentation and CSF eosinophilia together with a history of known or possible exposure to infective *A. cantonensis* larvae.

A. cantonensis recovered from man is usually a young adult, 100 to 260 microns in diameter. It has a cuticle about 5 microns. There is no lateral alae. The somatic muscle are polymyarian and the cells are usually lower than the lateral cords. The intestine is large in diameter and contains a few cells. The female worm has 2 reproductive tubes that coiled around the intestine. The male worm has a single tube.

The other round worm infections commonly seen in the brain includes *Gnathostoma spinigerum*, *Baylisascaris procyonis* and *Toxocara canis*. These worms can be differentiated from *A. cantonensis* easily by the worms size and morphologic characteristics.

The human infection in Taiwan is reported due to eating or contact with the African

land snail, *Achatina fulica* in majority of cases. The patient didn't travel outside Taiwan but he denied eating any raw snail or fish. Interestingly instead he had twice applying pounded African land snail as topical dressing for his hemorrhoid about a month before the illness. This might be the route of his infection. This particular way of infection has not been ever described.

References:

1. Yii CY and Cross JH. Human angiostrongyliasis in Taiwan. Southeast Asia J Trop Med Pub Hith 1:154 1970
2. Yii CY, Chen CY, Chen ER et al. Epidemiologic studies of eosinophilic meningitis in southern Taiwan. Am J Trop Med Hyg 24:447-54 1975
3. Punyagupta S, Juttijudata P, Binnag T. Eosinophilic meningitis in Thailand. Clinical studies of 484 typical cases probably caused by *angiostrongylus cantonensis*. Am J Trop Med Hyg 24:921-31 1975
4. Dooley JR and Neafie RC. Angiostrongylus cantonensis infection. In Binford CH and Conner DH. Pathology of tropical and extraordinary diseases. AFIP 1976 p446-51
5. Gutierrez Y. Angiostrongylus in diagnostic pathology of parasitic infestation with clinical correlation. Lea & Febiger Philadelphia 1990 p208-14
6. Weller PF. Eosinophilic meningitis. Am J Med 95:250-53 1993
7. Hwang KP, Chen ER, Chen TS. Eosinophilic meningitis & meningoencephalitis in children. Acta Paed Sin 35(2):124-35 1994