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Review Article

The Epidemic and Control Measures of HIV Infection in Taiwan

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Abstract

In 1981, the first case of HIV (Human Immunodeficiency Virus) infection was identified in the United States; the number of infected people has been rapidly increasing in the world. The epidemic of HIV infection in Taiwan started in 1984, and a total of 21,856 cases were reported to acquire HIV infection through Nov. 2011. The major risk of HIV infection was the transmission of virus via unprotected sex behavior before 2005. Afterward, intravenous drug abusers became the main population of new HIV infections. In 2008, men who have sex with men (MSM) grew to be the predominant population. The age to acquire HIV infection was decreasing as well. In order to manage HIV transmission, the government of Taiwan has prompted several prevention programs, and collaborated with nongovernmental organizations to effectively prevent the spread of HIV infection.

Key words: Epidemic, control measures, HIV, Taiwan

Introduction

HIV (Human Immunodeficiency Virus; HIV) a chronic infectious disease and is now a great threat to civilized society. HIV has been changing since its appearance; not only it has many subtypes and mutates quickly, its mechanisms to interact with the human immune system are complex. Consequently, there is no cure for HIV infection at the present time. In 1981, the first case of HIV was identified in the United States, and the number of infected victims has been rapidly increasing world-wide. At the end of 2010, an estimation of 34 million (31.6 million–35.2 million) people was living with HIV infection. There were 2.7 million (2.4 million–2.9 million) new patients infected with HIV in 2010. The number of death from AIDS-related diseases was estimated to be 1.8 million (1.6 million–1.9 million) in 2010^[2]. The net increase

in the total number of HIV-infected patients brings about an overall loss of national labor force and in an increase of health care expenditure. Seeing the global epidemic of HIV infection and its impacts on society and economics are rigorous, governments from all nations gradually raised the levels of awareness and preparation and listed HIV prevention as their major national policy.

In recent years, internet technology and international travel are growing popular; the communications between humans are all the time more. This trend has been accompanied by the domestic increase of the number of HIV-infected patients annually. The first case of HIV infection in Taiwan was reported in 1984, and till Nov. of 2011, an accumulation of 21,856 infected cases has been registered, of which 8,322 cases developed into the stage of acquired immunodeficiency syndrome (AIDS). Among the infected, 18,532 victims was still survival in Nov., 2011^[3]. In 2005, 72.5% of the newly infected cases were intravenous drug user (IVDU), and with policies of reducing IVDU, the amount of IVDU HIV infection diminished

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dramatically and steadily. The recent 1,814 fresh infected cases before Nov. 2011 were predominantly transmitted via male-male sex behavior (MSM) which accounted for 54.1% of the cases. In the same period, 14.6% of the infected cases were heterosexual and 7.3% were bisexual, and IVDU dropped to 4.0%. Apparently, the new threat of HIV infections is among the populations of MSM and heterosexual behavior, especially the unsafe sexual practice in the MSM population results in a high HIV infection rate and a decrease in the age of infection.

The current status in Taiwan

Promotion of HIV/AIDS prevention and control was initiated in 1985^[1]. A national monitoring system for the HIV reporting has been built up since Dec. 1990; through this legal mechanism of infectious diseases surveillance, the HIV epidemic has been better recognized. Before the year of 2003, most of the HIV cases were mainly infected via unprotected sex behavior, of which MSM were predominant. Later, between 2004 and 2007, the cases of IVDU rapidly grew through sharing infected needles, syringes and diluting fluid. The practice of reducing IDU programs rapidly and effectively decreased the newly infected cases in the IVDU population.

Since 2008, the epidemic has evolved into the transmission via unsafe sex in the populations of MSM and heterosexual behavior^[9]. A cumulative reported cases of HIV infection, as of Nov. 2011 had been 21,856 patients, of which 20,225 cases (92.54%) were male, 1,631 were female patients (7.46%). The male to female ratio were about 12:1. In terms of age, young adults were predominant in the HIV-infected population, among which 8,562 cases (39.17%) were 20-29 years old, followed by 7,544 cases (34.52%) were 30-39. It is noticeable that the new HIV infections in the population of MSM aged between 15-24 years old is still growing.

The transmissions of HIV infections are mainly via the blood, sex and mother-to-child vertical transmission. The promotion programs for prevention and treatment in Taiwan are:

For intravenous injection drug abusers:

The figures of IVDU to be infected by HIV outnumbered those of the sexual modes of transmission in 2005. As the most important high-risk groups,

based on Taiwan national surveillance data, the new IVDU HIV-infected victims in 2005 went up to 2,416 patients, which were 72.5% of the total number of reported cases. The trend that new HIV infections among IVDU accounted for more than two-thirds of new cases in Taiwan was similar to those trends in the epidemics in some Asia and Eastern European countries. This trend will supposedly turn HIV infection epidemic among IVDU populations into the spread in the general public groups of community promptly. In accordance with the advice from the U.S. Centers for Disease Control (US-CDC) to avoid HIV infection spreading into the community, when the prevalence of HIV infection in IVDU population was less than 5%, the prevention and treatment plans should be commenced accordingly as soon as possible. To be successful, the adopted programs should be multi-pronged approaches. As Executive Yuan of Taiwan approved in 2005, the "Drug-AIDS patients harm reduction pilot project (毒品病患愛滋減害試辦計畫)", were proposed and implemented by the Department of Health and Taipei City, Taipei County, Taoyuan County and Tainan County. In 2006 the programs were extended nation-wide as "Syringe exchange programs (清潔針具計畫)" and "Methadone maintenance treatment (美沙冬替代治療)". For the "Harm reduction program (減害計畫)", three cores were included: (a) to expand HIV screening services to monitor the infections of HIV and other sexually transmitted diseases in IVDU cases, to identify the cases and to recognize their needs; (b) to initiate the exchanging needle and syringe program and to provide counseling opportunity and drug addiction assistance; (c) to provide replacement therapy, additional tracking and counseling, education for drug uses, and referral for IVDU problems^[4]. After intensive promotion of "Harm reduction program" for IVDU, in 2006 the growth trend of new HIV infections was reversed for the first time, and the HIV-infected IVDU patients were better treated. Thereafter, the percentage of new HIV-infected IVDU patients in all new cases decreased from 72% in 2005 to 5% in 2011^[9-10]. The effects had been remarkable, however, should not be overemphasized. Further in-depth practice to promote harm reduction strategy should be implemented and additional efforts to work on the not yet touched IVDU groups in an efficient way for the help of harm reduction programs should be achieved.

Men who have sex with men (MSM):

It was estimated that at least 5-10% of HIV infections occurred in the MSM population. In Taiwan, sexual behavior between male and male continues to rise every year recently. The number of the newly reported MSM HIV infected cases in 2007 accounted for 40% (776 cases) of all new infections, in 2008 58% (1,007 cases), in 2009 67% (1,095 cases), and in 2010 71% (1,275 cases). The age group of HIV infection in the MSM population has mainly been the young adults. For 15 to 24 years of age, the new HIV-infection cases was 25% (191 cases) of all infected cases in 2007; the percentage continued to rise to 29% (288 cases) in 2008, 31% (340 cases) in 2009, and 30% (381 cases) in 2010. In the MSM population, the youngest infected victim was 15 years of age. It is obvious that the age to acquire HIV infection in the MSM population has been dropping^[9, 11].

Taiwan's education towards different sexual orientations has been lacking, and the learning to be respectful and to promote a friendly environment for MSM needs to be built up. The prevention strategies of HIV/AIDS for the comrades of homosexual groups are to use the consensus groups in the Internet community, to set up the community health service centers, and to recognize the comrades-friendly, healthy and safety mark store authentication. These interventions have been delegated and supported by Taiwan CDC. In 2008, "The sexual dynamic Web site" was put to operate and provided an in-depth and close to the homosexual population connections by using the network of comrades. This helps to provide a correct knowledge of HIV prevention and messages. Taiwan CDC also subsidizes the activities related to civil society, such as "Club1069 extension peak network (Club1069 拓峰網)", "G-man discussion forum (G-man論壇討論區)", etc., through the talk between comrades that is familiar with the language and dialogue of homosexual groups. These interventions and "peer group (同儕互助團體)" approaches help to clarify the HIV infection routes, and even ease the anxiety of being infected. While helping and encouraging the support and acceptance of HIV infected victims, there have been programs to promote health maintenance of the homosexual groups, for examples, establishing a "No condom, No deal" policy in the gay community in order to prevent HIV/AIDS as an important concepts. These were commissioned in 2010 from "Taiwan Lourdes Association (社團法人台灣露德

協會)", "Association of Hope for Taiwan Love (社團法人台灣愛之希望協會)" and "Taiwan want to love the Red Ribbon Foundation (財團法人台灣紅絲帶基金會)", and community health service centers for comrades ("Taichung Rainbow Paradise (彩虹天堂-中區同志健康文化中心)", "Sunshine Queer Center (陽光酷兒中心)", "GisneyLand (風城部屋)") were set up in Taichung, Kaohsiung and Hsinchu to provide local gay communities with the information of health and HIV prevention and control. These would help the gay friends gathered to enhance their concepts and abilities for self-health management. In 2011, with the assistance from industry, local governments and civil society, a joint effort to promote the safety of "Gay-friendly sauna for the recognition of healthy and safety stores development plan (男同性戀三溫暖友善、健康、安全商店標章推動計畫)", was initiated to encourage sauna stores to provide condoms, to improve store environment, and to comply with an HIV screening and health counseling policy to reduce the possibility of HIV spreading in the sauna^[7, 9, 11].

Sexually transmitted disease (STD) patients:

World Health Organization (WHO) has pointed out that if any one of the sexual partner has STD, the chance of HIV infection through sexual intercourse will be greatly increased. The experts of the US-CDC also pointed out that if the infection rate of syphilis rises, The HIV infection epidemic will be increased as well. At the end of 2010, the number of Taiwan HIV infection were 20,057 cases, in which 3,335 (17%) people also suffered from syphilis and 270 (1.3%) had gonorrhea. This indicated that HIV-infected patients have higher chances to acquire STD than the general population. Therefore, patients with STD should be the strategic focus for the prevention and treatment of HIV infection. In 2003, there were "Program for HIV Screening in institution for the withdrawal of drug addiction (藥癮戒治機構之藥癮者愛滋病毒篩檢計畫)" and "Sexually transmitted disease sentinel surveillance and HIV screening Program (性病定點醫師監測及HIV篩檢計畫)" to promote the HIV prevention and these programs yielded HIV positive rates of 2% and 0.3%, respectively. In 2008, "a comprehensive screening of HIV infection in patients of sexually transmitted diseases and patients with drug addiction program (性病及藥癮病患全面篩檢愛滋病毒計畫)", as commissioned by the National Health Insurance Bureau of Taiwan, was integrated to

promote the physician's willingness to perform HIV tests via the simplification of operation and payment procedures. This provided 7,878 and 30,325 patients with patient education and STD screening services, and yielded positive rates of 0.41% and 0.49% in 2008 and 2009, respectively^[8, 9].

Prevention of mother-child vertical transmission:

As of Nov. 2011, a domestic total of 1,631 cases of HIV infection were identified with Taiwan nationality, which accounted for 7.46% of all HIV-infected patients. The age distribution of HIV-infected females was 89.32% within the reproductive age. Hence, it is critical to prevent the HIV-infected woman from unplanned pregnancy to avoid vertical transmission of HIV via mother-child pathway^[3]. The global statistics from World Health Organization (WHO) showed that there is a declining trend in the rates of mother-child vertical transmission. An estimation of 540,000 cases (470,000-610,000) in 2000 was declined to 430,000 cases (370,000-490,000) in 2009; there was an additional decrease of 26% in 2010 with an estimation of 390,000 cases (340,000-490,000) world-wide^[2]. At present, anti-HIV drugs, substitutes for breast feeding and other methods, reduced the chances of baby HIV infection from 45% to 4%. In Taiwan, the mother-child transmission rate has been low and the domestic HIV-infected babies were 29 cases (0.13%).

In order to prevent mother-child vertical transmission, domestic screening program for pregnant women was initiated in 2000 on a trial basis and the "HIV screening of pregnant women comprehensive plan" has been included HIV screening in the prenatal routine check since 2005. This checkup is performed at the first prenatal checkup visit of the first pregnancy period; it is carried out in obstetric hospitals nationwide to provide pregnant women with free HIV testing services for all prenatal examinations, and no-clinical-record or high-risk mothers. This practice improves the availability and accessibility of HIV testing of pregnant women^[5].

For the past 6 years since 2005, the programs to promote mother-child HIV vertical transmission prevention has been completed in approximately 200 thousand pregnant women each year, and 79 cases of newly reported HIV-infected pregnant women were identified before the end of 2011. More than 90% of the HIV-infected pregnant women could therefore

receive preventive therapy and the percentage of mother-child vertical transmission has declined every year.

Beside the implementation of HIV testing in pregnant women, an additional domestic control strategy to prevent mother-child transmission is to persuade the HIV-infected mother from breast feeding, as this could reduce the baby from the 5-20% risk of acquiring HIV infection from breast feeding. Since 2008, a plan of "Suspected HIV-infected babies health care actions (疑似愛滋寶寶醫療照護作業)" by Taiwan CDC has provided breast-milk substitutes and tracked the expenses of medical specimen collection and medication management of children given birth by HIV-infected mother under 18 months of age to ensure their appropriateness of medical care and their free of vertical transmission.

Anonymous HIV screening program:

To prevent possible HIV transmission via transfused blood donated by high risk populations of HIV infection who may use blood donation as a route to test self HIV infection, in Taiwan, the "free and anonymous screening for HIV program (免費匿名篩檢計畫)" was commenced following the methods by foreign countries in 1997. Beginning in 2005, the county and city health bureau began to provide free anonymous HIV screening, and the Taiwan CDC, contracted 10 designated hospitals in 2007 to offer free anonymous HIV screening and expanded to 24 hospitals in 2010 to make this service available nationwide. Further expansion of the free anonymous HIV screening to 32 hospitals was held in 2011 and this covered the testing and counseling services for sexually transmitted diseases. By May 2011, 9,413 people were completed for screening, and 195 cases were positive for HIV infection, yielding a positive rate of 2.07%. In recent years, many civil organizations and medical institutions started to offer anonymous screening service. The purposes of anonymous screening are: firstly, to protect the privacy of tested subjects for early diagnosis of HIV and to facilitate their early treatment; secondly, to make the tested subjects to learn about the risk of infection through health education and counseling, and therefore to reduce possible HIV infection and transmission; thirdly, to ensure the infected cases to receive proper medical care, psychological and social support via the processes of anonymous screening and counseling;

and the fourth, to provide the sexual partners or needle sharing friends of the HIV-test positive patients with proper screening and counseling^[12].

Conclusion

The trends of HIV epidemic and its main modes of transmission evolve over time. In Taiwan, the HIV infection has experienced a previous IVDU and then progressing to an MSM behavior in recent years as the major route of transmission. The number of HIV-infected victims continues to rise each year, and the infected tends to be younger gradually. In response to these changes in HIV epidemic, the Taiwan CDC has promoted several programs of prevention and treatment effectively to manage the ever-changing problems. Although the results have been promising, efforts from a single sector alone are not sufficient to accomplish the prevention works for HIV infection nationwide. There must be cooperation among central ministries and departments to develop the policies of health care, education, social welfare, rights protection, HIV prevention media campaigns, and other specific strategies to minimize the discrimination and silence towards HIV-infected personnel. Enhancing the respects for sexuality and cultural diversity and working together with local and non-governmental organizations to establish a good collaboration are essential to effectively curb the spread of AIDS.

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台灣地區愛滋病流行現況

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摘要

人類免疫缺乏病毒 (Human Immunodeficiency Virus, HIV) 是現今文明社會中極具威脅的慢性傳染疾病，特別是愛滋病毒變化多端，不但有許多亞型且突變很快，加上其影響人類免疫系統的機制複雜，當今尚無治癒的藥物，且其迅速地蔓延引起全世界的關注，自 1981 年在美國發現第一個病例以來，全世界感染的人數正急速的增加中。至 2010 年，依據世界衛生組織估計之資料顯示，全世界愛滋病報告病例有 3,400 萬例 (3,160 萬-3,520 萬)，其中 2010 年當年新增 270 萬例 (240 萬-290 萬)，在 2010 年因愛滋病相關疾病致死亡估計有 180 萬例 (160-190 萬) [2]。由於 HIV 感染者人數的增加帶來的是國家整體勞動力的損失及衛生醫療保健費用的龐大支出，因影響層面擴及國家社會與經濟層面，故為因應全球疫情變化，各國紛紛提高國家因應層級，將愛滋病的防治列為國家重大政策。

關鍵詞：流行病學、控制方法、人類免疫不全病毒感染、臺灣

The Serogroup and Antibiotic Susceptibility In Salmonella that was isolated from the Children in a Hospital

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Abstract

Background: Salmonella is the most common cause of bacterial enterocolitis among children and infants. About 15-20% of the patients admitted due to acute enterocolitis were infected with salmonella in our hospital during recent years. Ampicillin has been the first line of empiric treatment for the inpatients with salmonella infection. Antibiotic resistance rate have steadily increased in Taiwan, hence, antibiotic susceptibility is very important to clinicians.

Method: To evaluate the epidemiology and antibiotic susceptibility in our hospital, we have collected 143 inpatients with Salmonella infection at our hospital from January 1, 2007 to December 31, 2009. Antibiotic susceptibility were analyzed for evaluating antibiotic resistance.

Result: A total 143 Salmonella isolates were analyzed in this study. Serogroup B has been the most prevalent (37.25%) among all Salmonella isolates, followed by serogroup D1 (35.95%) and serogroup C (20.26%).

Discussion: The sensitivity for treating Samonella is 67.32% for ampicillin, 73.86% for sulfamethoxazole/ trimethopim (SMX/TMP), 96.8% for ceftriaxone, and 98.04% for ciprofloxacin. Third generation of cephalosporins and fluoroquinolones remained effective against most of the Salmonella infection during this study period.

Key words: Salmonella, susceptibility, resistance

Introduction

Non-typhoid salmonella usually causes diarrheal diseases in humans. However, serious complications of extra-intestinal infections such as bacterial meningitis, sepsis, osteomyelitis can occur following gastroenterocolitis.^[1] Increasing antimicrobial resistance in non-typhoid salmonella species has been a serious problem for public health worldwide.^[2,3] High resistance rate among many conventional antibiotics, and growing resistance to newer antimicrobial agents has been the major problems of treatment of salmonella infection in children.^[3,4] To evaluate the antibiotic

susceptibility and epidemiology of Salmonella infection in our hospital; 143 cases of pediatric patients due to Salmonella infection in our hospital for a period of three years were reviewed. Serogroups and antibiotic susceptibility were analyzed.

Methods

In our study we collected all patients admitted at our pediatric ward due to acute gastroenterocolitis with positive stool culture for Salmonella infection between January 1, 2007 and December 31, 2009. A total number of 143 cases with a positive stool culture for Salmonella were collected.

All isolates were identified according to the standard methods/protocols. Salmonella isolates were checked with O antisera (Difco) for their serogroups

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by the slide agglutination method. The antimicrobial susceptibility of these isolates was investigated by the standard disk-diffusion method. The antimicrobial agents including ampicillin (10 mcg), ceftriaxone (30 mcg), ciprofloxacin (5mcg) and sulfamethoxazole/trimethoprim (SMX/TMP) were examined. Susceptibility and resistant isolates were defined according to the criteria suggested by Clinical and Laboratory Standards Institute CLSI (2010).

Results

A total number of 143 *Salmonella* isolates were analyzed in this study. The numbers of isolates for major serotypes of salmonella are shown in table 1. Serogroup B has been the most prevalent (37.25%) among all *Salmonella* isolates, followed by serogroup D1 (35.95%) and serogroup C (20.26%). (Table 1)

Age distribution

Among the total 143 cases collected in our study, the age of the patients range from 1 month to 15 years of age and one month, with the average age of 2.8 years. Age distribution of different serogroups

was shown in table 1.

Antimicrobial susceptibility

Total 143 isolates were examined with ampicillin (10 mcg), ceftriaxone (30 mcg), ciprofloxacin (5mcg) and sulfamethoxazole/trimethoprim (SMX/TMP). The susceptibility rate of serogroup B to ampicillin is 40.35%, 56.14% to sulfamethoxazole/trimethoprim (SMX/TMP), 94.74% to ceftriaxone and 96.49% to ciprofloxacin. As for serogroup D1, the susceptibility rate ampicillin is 87.3%, 92.73% to sulfamethoxazole/trimethoprim (SMX/TMP), 100% to ceftriaxone and ciprofloxacin. The antimicrobial susceptibility result is shown/summarized in table 2. Antimicrobial susceptibility with ampicillin and sulfamethoxazole/trimethoprim (SMX/TMP) showed no significant differences ($p>0.05$) in different serotype. However, ceftriaxone and ciprofloxacin showed significantly higher susceptibility rate differences in serogroup B ($p<0.05$).

Antimicrobial susceptibility of all the isolates to ampicillin is 67.32%, 73.86% to sulfamethoxazole/trimethoprim (SMX/TMP), 96.08% to ceftriaxone and 98.04% to ciprofloxacin.

Table 1. Serogroup distribution of the isolates

Serogrop	Serogroup B	Serogroup C	Serogroup D1	Serogroup E	Salmonella spp
Number	57	31	55	7	3
Percentage	37.25%	20.26%	35.95%	4.58%	1.96%
Age (years)	2.6 ± 2.3	1.8 ± 1.5	3.7 ± 3.4	2.3 ± 4	1.5 ± 1.3

Table 2. Antimicrobial susceptibility

Serogroup	Ampicillin			Sulfamethoxazole/ trimethoprim			Ceftriaxone			Ciprofloxacin		
	S	I	R	S	I	R	S	I	R	S	I	R
Serogroup B	23 40.36%	1	33 57.89%	32 56.14%	1	24 42.11%	54 94.74%	2	1 1.75%	55 96.49%	1	1 1.75%
Serogroup C	25 80.65%		6 19.35%	22 70.97%		9 29.03%	31 96.77%			31 96.77%		
Serogroup D1	48 87.27%	2	5 9.09%	51 92.73%		4 7.27%	55 100%			55 100%		
Serogroup E	6 85.71%		1 14.29%	6 85.71%		1 14.29%	6 85.71%		1 14.29%	7 100%		
Salmonella spp	1		2	2		1	2	1		2	1	

Discussion

We had 143 cases of *Salmonella* enterocolitis from patients admitted to our pediatric wards over a period of three years in this study. Almost all patients were residents from central Taiwan regions nearby our hospital. There were no geographical differences among the isolates. Among the 143 isolates, the majority is serogroup B (57, 37.25%), which is consistent with the findings reported in earlier/other Taiwanese studies.^[5-7] One thing that draws our attention is the fact that the number of serogroup D1 infection in this study has surpassed serogroup C, which used to be the second most common type of such infections reported in previous studies.^[5]

Non-typhoid salmonella enterocolitis is self limiting in normal hosts; antimicrobial therapy is not indicated since it may prolong the illness. However, in very young patients, bacteremia and other extra-intestinal infections may occur and result in serious complications. In our study, the highest antimicrobial resistance rate to ampicillin is found in serogroup B. Since serogroup B is the most common serogroup among *Salmonella* infection in children, sulfamethoxazole/trimethoprim (SMX/TMP) may be a more suitable option than ampicillin as for empiric antibiotic treatment of *Salmonella* enterocolitis in children. Compared with serogroup B, serogroup C had a higher susceptibility rate to ampicillin than to sulfamethoxazole/trimethoprim (SMX/TMP).

Antibiotic susceptibility is almost the same as the previous results reported. The drug sensitivity rate is 67.32% for ampicillin, 73.86% for sulfamethoxazole-trimethoprim (SMX/TMP), 96.8% for ceftriaxone, and 98.04% for ciprofloxacin. Third generation of cephalosporins and fluoroquinolones remained effective against most of the *Salmonella* infections during this study period.

Conclusion

Salmonella is the most common cause of bacterial enterocolitis among infants and children worldwide.^[1] Ampicillin is the first line therapy of *Salmonella* infection. However, the high resistance rate found in our study and previous reports^[4] will result in the failure of such treatment. Sulfamethoxazole/trimethoprim (SMX/TMP) maybe a better combination unless the child had Glucose-6-Phosphate Dehydrogenase deficiency (G6PD), which is known to be contraindicated. As regards severe *Salmonella* infection including sepsis, peritonitis, meningitis and osteomyelitis, ceftriaxone should be considered instead of first generation cephalosporin, since it has much better antimicrobial susceptibility rate than other antimicrobial agents.

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某醫院兒童沙門氏桿菌感染之探討研究

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摘要

沙門氏桿菌之感染是個相當古老但仍對人類肆虐的疾病，如大家所熟知的傷寒即是它們的傑作之一。沙門氏桿菌腸胃炎更是嬰幼兒細菌性腸胃炎最常見的病因之一。近年來由於抗生素普遍的使用，臺灣沙門氏桿菌之抗藥性也相當嚴重，造成病患治療上的困難。所以，如何適當選擇抗生素成為醫師面對病患時很重要的一個課題。

本研究以回溯性病例收集分析本院96年1月1日至98年12月31日間因急性腸胃炎住院的病患，以電腦將96-98年因腸胃炎住院且確定為沙門氏桿菌感染使用抗生素Ampicillin或Ceftriaxone的案例找出Salmonella infection血清型分布情形與抗生素敏感性。

分析結果發現serogroup B 仍是最多的，serogroup D1次之，所有沙門氏桿菌菌株對Ampicillin、Sulfamethoxazole/Trimethoprim (SMX/TMP)、Ceftriaxone與Ciprofloxacin的敏感性分別為67.32%、73.86%、96.08%與98.04%。

關鍵詞：沙門氏桿菌、敏感性、抗藥性

Original Article

小兒預防接種流程滿意度之介入成效

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摘要

目的：本文旨在了解中部某區域教學醫院，於2007年4月接獲家屬對小兒疫苗預防接種安全的抱怨，繼而進行介入措施改善，以了解滿意度改善的過程。

方法：採縱貫式介入性研究設計，依半結構式訪談指引所得結果擬成結構式問卷，從接受預防接種的家屬隨機取樣100位，瞭解小兒預防接種流程不滿意狀態，進行策略改善後，再採立意取樣，以電訪方式，針對30位願意進行滿意度前後測家屬，瞭解整體性之改善狀態。

結果：小兒預防接種流程不滿意前五項，分別為：「資訊提供不足」、「疫苗辨識過程未公開」、「作業流程不一致」、「無獨立施打空間」、「施打時間標示不清」。收集30位願意進行滿意度前後測的家屬，改善措施執行前的滿意度分別為：資訊提供70.6、作業流程64.6、空間69.4%、疫苗辨識過程66.6%，整體平均分數為67.8%。根據文獻及矩陣分析制訂介入改善措施，包含：修訂小兒疫苗衛教單張、製作小兒疫苗辨識看板、修定標準作業流程、設置專屬小兒注射區、印製施打時間表。介入改善措施實施後，滿意度由原67.8%提升至88.1%。

結論：本研究不僅改善本院小兒預防接種流程，同時亦提昇顧客之滿意度及護理品質，值得在臨床上繼續推廣。

關鍵詞：預防接種、滿意度、成效

前言

預防接種是二十世紀預防傳染病，有效且經濟的方法^[1-3]。台灣自1948年起，為降低疾病率，自出生到孩提時期約需接受十餘種疫苗注射，從成本效益觀點來看，預防接種確實節省不少醫療及社會成本^[4-5]。但根據疾病管制局（2009年3月6日）預防接種受害救濟審議個案統計，1995-2007年因疫苗接種衍生不良反應，申請之救濟案例多達196件^[6]，多數家長對預防接種有如正襟危坐，害怕誤打或不慎而遭至禍端^[1]。

預防接種意外時有所聞，其安全性及必要性成爲

家長擔憂及關注的焦點^[17-18]。預防接種常見的局部反應包括，注射部位的紅、腫、痛；發燒、紅疹、哭鬧不安、昏厥、抽搐、神經系統損傷等全身性反應^[1,8-9,15-16]。爲減少預防接種引發副作用，除嚴格執行無菌技術外，品管監測、接種部位的選擇、接種藥物劑量準確與否，都是重要的監測因素^[12]。根據文獻得知個案的身體狀況或體質、疫苗的品質與保存、操作流程皆會影響疫苗接種的安全性^[13]。故施行預防接種時，應向家長充份告知疫苗作用原理、接種方法、接種後的注意事項、反應及處理方式^[14]。預防接種率與雙親的支持度攸關，雙親若對疫苗呈恐懼或認知不足，常會因此而拒絕接種疫苗，若能提供清楚的資訊及完整的評估及解說，將有助於減緩焦慮，增加接種率^[11]與預防注射的滿意度。

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根據台中市政府主計室(2009)針對嬰幼兒預防接種服務品質電訪結果發現,民眾對醫院預防接種不滿意原因分別為:態度不佳、未做注射前之健康評估、未能主動告知注意事項以及等待時間過長^[7];認為醫院預防接種需加強之處有:預防接種宣導、增加接種疫苗時段、提供接種後需注意的事項、疫苗品質的保證以及其他(如:疫苗施打應與門診分開、不要發生打錯針事件、應防止重複接種及遺漏施打、讓家長瞭解疫苗來源及品質等^[7])。

本院在2007年4月接獲一名家屬抱怨投訴,主訴其子前後二次至本院接受日本腦炎疫苗注射,因藥品包裝不同,引發其對本院預防接種安全性的質疑,後經查證,確認護理人員雖未給錯藥,但事件處理過程,檢視本院預防接種流程,仍有待改善;故本研究目的有二,了解家屬對預防注射流程不滿意的事項,並評估介入措施之成效。有鑑於此,特成立專案小組,針對引起不滿意的原因進行調查,制定與施行改善方案,期望能提昇民眾對本院小兒預防接種流程之滿意度。

研究材料及方法

一、研究對象

本研究為縱貫式介入性研究設計,選取自中部某區域教學醫院門診個案,經解說同意接受問卷調查者為研究對象。研究對象篩選標準為:(一)意識清楚,能以語言或文字與研究者溝通。(二)接受預防注射之家屬。(三)同意參與本研究。

二、研究工具

本研究資料蒐集分三個階段。第一階段:研究工具為半結構式問卷,採立意取樣,受訪對象為10位幼童家屬,幼童在本院接受預防注射,徵詢家屬同意,並填妥同意書,研究者以半結構式訪談指引面談,內容包括:1.請您描述您的子女至本院接受小兒預防接種對整體流程之感受?2.您對本院小兒預防接種流程是否滿意?原因為何?訪談內容經錄音轉譯文字稿且分析。第二階段:研究工具為自行開發的結構式問卷,此乃依據第一階段結果設計成結構式問卷,隨機取樣100位家屬,瞭解小兒預防注射流程不滿意的主要因素。第三階段:在可行性、經濟性及效益性之考量下,以80/20定律,依據第二階段結構式問卷所分析的結果,選出排名前五項不滿意項目作為介入改善方案,措施包含修訂小兒疫苗施打作業標準書、新增衛教單張、統一衛教內容、設置獨立小兒疫苗注射區、製作疫苗實品辨識看版及疫苗施打時間表,貼於兒童健康手冊內頁等,進行流程改善。以立意取樣,採用電話訪問30位家屬,了解

「小兒預防接種流程滿意度」改善前後之比較。

三、資料分析

資料經編碼後,採用中文版套裝軟體SPSS 13.0進行次數分配與百分比等描述性統計分析。

結果

一、人口學基本屬性

共30位個案,平均年齡為42.9歲,教育程度小學畢業者有7人佔23.3%;國中畢業者有3人佔10.0%;高中畢業者有9人佔30.0%;大學畢業者有11人佔36.7%。27位是母親佔90.0%,3位是父親佔10.0%;30位全是注射白喉、百日咳、破傷風佔100.0%。

二、家屬對預防注射流程不滿意的事項

經分析,家屬對預防注射流程不滿意的內容,包含資訊內容提供不足、藥品辨識過程未公開、作業流程不一致、無獨立施打空間、施打時間標示不清、醫囑輸入錯誤造成家屬往返修改、醫生未能配合健兒門診作業、等候時間太長、領藥與注射地點不同、其他等因素;將所獲得的結果製成特性要因圖(圖1)。在第二階段對100位家屬的問卷結果分析,家屬對預防注射流程最不满意項目包括:資訊內容提供不足(31%),疫苗辨識過程未公開(17%)、作業流程不一致(14%)、無獨立施打空間(10%)、施打時間標示不清(9%)、醫囑輸入錯誤造成家屬往返修改(6%)、醫師未能配合健兒門診作業(5%)、其他(8%)。(參見表1、圖2)

三、介入措施的滿意度

在實施介入措施前,以「小兒預防接種流程之滿意度」量表進行前測,針對五項重點,包括:資訊內容提供、疫苗辨識過程、作業流程、疫苗施打空間、施打時間標示,進行測試。依滿意百分比從高到低排序,結果依序為資訊內容提供足夠(70.6%)、疫苗施打空間滿意(69.4%)、施打疫苗時間標示清楚(68%)、疫苗辨識過程公開(66.6%)、作業流程一致(64.6%)。整體滿意度為67.8%。在實施介入措施後,以同樣的量表及方法進行後測。依滿意百分比從高到低排序,依序為作業流程一致(93.4%)、疫苗施打空間滿意(90.0%)、疫苗辨識過程公開(89.4%)、資訊內容提供足夠(86.0%)、施打疫苗時間標示清楚(82.0%)。五項重點之滿意度均明顯提升,整體滿意度自67.8%增加到88.1%(參見表2、及圖3)。百分比增加最多的項目為作業流程一致性,增加28.8%。

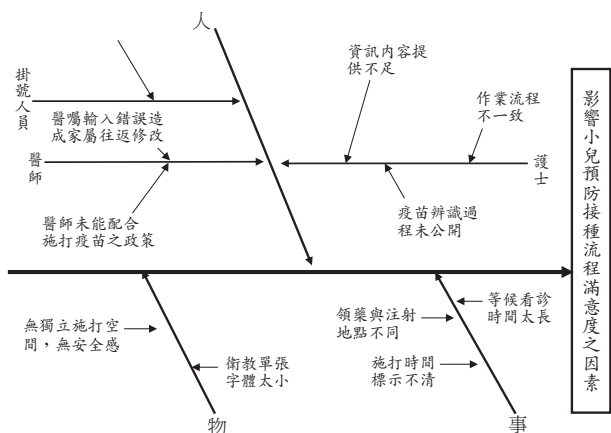


圖 1 影響小兒預防接種流程滿意度因素之特性要因圖

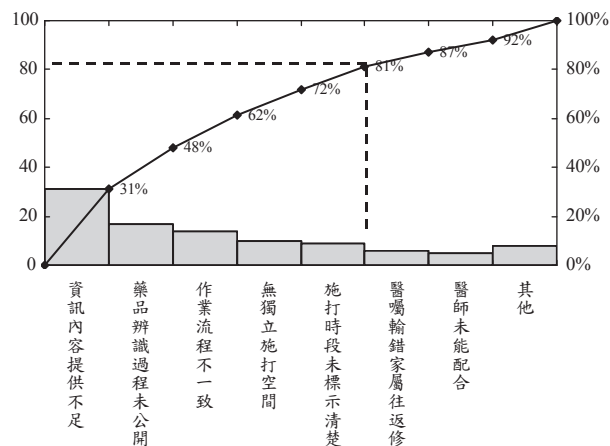


圖 2 「影響小兒疫苗施打流程滿意度之因素」之柏拉圖

表 1 家屬對預防注射流程不滿意的事項

N=100

項目	人次	累積百分比	排序
1. 資訊內容提供不足	31	31	1
2. 疫苗辨識過程未公開	17	48	2
3. 作業流程不一致	14	62	3
4. 無獨立施打空間	10	72	4
5. 施打時間標示不清	9	81	5
6. 醫囑輸入錯誤造成家屬往返	6	87	6
7. 醫師未能配合健兒門診作業	5	92	8
8. 其他	8	100	7

表 2 家屬對小兒預防注射滿意百分比 -- 前後測結果

N=30

項目	前測		後測		增加百分比
	百分比	排序	百分比	排序	
1. 所提供訊息的內容足夠	70.6	(1)	86.0	(4)	15.4
2. 疫苗辨識過程公開	66.6	(4)	89.4	(3)	22.8
3. 作業流程一致性	64.6	(5)	93.4	(1)	28.8
4. 疫苗施打空間滿意	69.4	(2)	90.0	(2)	20.6
5. 施打疫苗的時間標示清楚	68.0	(3)	82.0	(5)	14.0
6. 整體滿意度	67.8		88.1		20.3

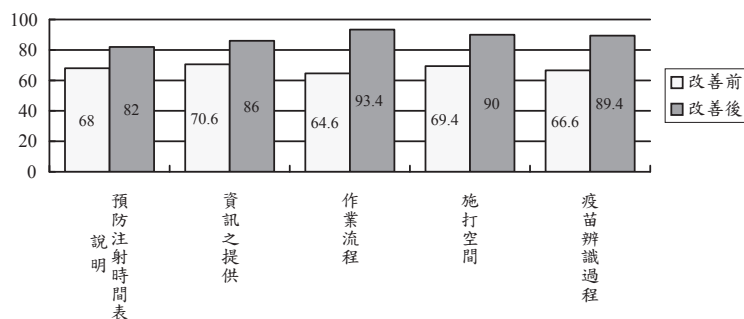


圖 3 五項改善措施介入前後之滿意度

討論與結論

本文旨在改善小兒預防接種流程，期以提升滿意度及品質。從本研究結果可發現，民眾在接受預防接種時，希冀獲得充份資訊提供，包含完整評估及注意事項告知，此與台中市政府主計室（2009）研究發現，民眾對醫院預防接種感到不滿意原因分別為未做注射前之健康評估、未能主動告知注意事項結果相符^[7]。Shart-Hopko（2009）指出預防接種時清楚的資訊提供、完整的評估及解說，將有助於減緩焦慮^[11]，本研究亦有相同的發現。此外，本研究發現預防接種流程不一致時，會使民眾心存擔憂，不知何者方為正確。依本研究結果顯示，標準流程的訂立及稽核機制有助於品質的控管；此與張、王（2004）指出，為減少預防注射引發之副作用，品管監測、接種部位的選擇、接種藥物劑量之準確與否，都是重要的監測因素^[12]，看法相似。

再者，從本研究結果發現，醫院若未設獨立的疫苗注射空間而與成人注射、血液輸注混雜於一室，除會讓家長擔心需與疾病患者相處，增加幼兒感染的風險外，亦會因流程的繁雜而造成病人安全的疏失。本研究為有效減低病安風險，將原本與成人注射同處一室的預防接種區域另設獨立專區，並以號碼牌方式及溫馨的卡通設計，營造預防接種專責區域，並著重親善與安全。此介入措施深受民眾肯定，亦與台中市政府主計室（2009）研究發現，醫院預防接種疫苗施打應與門診分開、應防止重複接種及遺漏施打、讓家長瞭解疫苗來源及品質，^[7]看法相同。此外，預防接種時，應向家長充份溝通，清楚核對疫苗種類、藥品、接種次數，以確定接種無誤，接種完成亦應清楚告知注意事項、反應及處理方式；本研究為清楚讓家長瞭解所執行的疫苗正確無誤，特以疫苗空瓶為樣品，加強解說並與家長一同進行藥品的辨識與核對，此一措施也獲得民眾良好的迴響，此結果與陳、楊、任（2008）提及施行預防接種時，應向家長充份告知疫苗作用原理、接種方法注意事項、反應及處理方式^[14]相符。

本研究不論是在硬體結構之改造、流程制定、操作、衛教解說各方面，小組成員及院方都做極大的投注與改善，不僅凝聚單位之向心力，亦創造民眾對本院觀感的另一佳績，提昇顧客之滿意度及護理品質，值得在臨床上繼續推廣。

一、研究限制

本研究結構式問卷，乃依據半結構式訪談結果而擬制，內容及資料蒐集會受限於現有流程。此外，介入措施滿意度前後比較，因屬縱貫性研究設計，致使收案樣本數較少，研究結果外推性受限。

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Intervention Efficiency of Satisfaction on Protective Inoculation for Young Children

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Abstract

Purpose: The purpose of this study was to investigate parents' degree of satisfaction on protective inoculation for young children.

Methods: A longitudinal intervention study was adopted, The study's questionnaires were designed based on interview results. In order to explore factors of unsatisfactory, random sampling was employed to select a total of 100 parents in the immunization clinic. After the implementation of intervention program, purposive sampling was employed to select a total of 30 parents. A Phone survey was conducted to understand the degree of satisfaction on the intervention program.

Results: Only 67.8% of parents were satisfied with the process of protective inoculation for young children. The five major complaints were inadequate provision of information, non-disclosure of the vaccine identification process, inconsistent procedures, the absence of a separate inoculation room, and a confusing inoculation schedule. An intervention program includes revising the immunization education pamphlet, making a billboard for identifying children's vaccines, setting up a standard operation procedure, building an extra room for children's inoculation, and rewriting a clear inoculation schedule. After implementing the proposals, the satisfaction rate of the parents rose from 67.8% to 88.1%.

Conclusion: This study not only raised the parents' satisfaction, but also increased the quality of nursing and could be applied to clinical practice.

Key words: protective inoculation, degree of satisfaction, efficiency

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Original Article

慢性緊縮型頭痛患者之頭暈或眩暈

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摘要

背景及目的：慢性緊縮型頭痛臨床上並不多見，部分慢性緊縮型頭痛患者會合併頭暈或眩暈，特回顧近3年內我們所遇之案例，並分享我們的診治經驗。

方法：回溯2008年至2010年間，診斷為慢性緊縮型頭痛，合併頭暈或眩暈，並已以磁共振影排除器質性病變之患者。他們會有完整的理學檢查、血液學檢查、神經耳科學檢查及整體腦血流量測量。神經耳科學檢查包括純音聽力檢查、眼振電圖、兩耳溫差測試及氣導震動式頸性前庭誘發肌性電位檢查。

結果：共6名患者（男4，女2），平均57.5歲。僅1名為左側後半規管之耳石沉著症，2名為上前庭神經路徑功能障礙，2名為腦幹之前庭神經核功能障礙，1名雖無法確認是否合併週邊性前庭功能障礙，但至少應有兩側中樞性前庭功能障礙。治療均以保守性複合療法為主。無人在慢性緊縮型頭痛消失後，仍苦於頭暈或眩暈。

結論：週邊性前庭功能障礙與中樞性前庭功能障礙各佔一半，可以適度地使用抗眩暈藥。只要頭痛消失，頭暈或眩暈也會跟著消失。

關鍵詞：慢性緊縮性頭痛、良性陣發性姿態性眩暈症、前庭神經病變、中樞性前庭功能障礙

前言

慢性緊縮型頭痛（chronic tension-type headache）定義為頭痛發作已經連續超過3個月，平均每月發作至少15日，或每年發作至少180日，每次發作會持續數小時或可能持續不斷，至少合併下列2項特徵：(1) 雙側、(2) 壓迫/緊縮性（非搏動性）、(3) 輕度或中度、(4) 不因走路或爬樓梯等日常活動而加劇，並且符合下列2項：(1) 最多只有畏光、怕吵或輕度噁心其中1項症狀、(2) 無

中度或重度噁心，也無嘔吐^[1]。

慢性緊縮型頭痛臨床上並不多見，僅佔緊縮型頭痛患者之2~3%^[2]，致病機轉目前仍不明，可能與精神壓力、頭頸部肌肉、交感神經節律、三叉神經核、痛覺中樞…間所形成的惡性循環有關，最後使頸部脊髓背角之三叉感覺神經核（trigeminal sensory nucleus）、視丘或軀體感覺皮質（somatosensory cortex）對於痛覺過度敏感^[2-4]。部分慢性緊縮型頭痛患者會合併頭暈或眩暈，診治往往困擾著臨床醫師，由於相關的研究文獻很有限，特回顧近3年內我們所遇之案例，並分享我們的診治經驗。

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材料及方法

一、研究對象

回溯桃園某區域醫院 2008 年至 2010 年間，符合以下 3 要件者：(1) 診斷為慢性緊縮型頭痛，(2) 合併頭暈或眩暈，(3) 已以磁共振造影排除中樞器質性的病變。這些患者會有完整的理學檢查、血液學檢查、神經耳科學檢查及腦血流量測量。

二、理學檢查

耳鼻喉頭頸理學檢查。一般神經學理學檢查包括四肢肌力、深腱反射、四肢及軀幹針刺感覺測試 (pinprick test)。前庭及小腦功能檢查包括注視性、姿態性眼振測試、姿態變換性 Dix-Hallpike 眼振測試、仰臥時頭向側轉眼振測試 (supine roll test)、Romberg 測試、Mann 測試、一前一後步伐測試、推頭測試、搖頭測試、雙手交替拍掌測試、指鼻追蹤測試、脛踝協調性測試、換氣過度測試、蹲踞突然站起測試及直立性低血壓測試。

三、血液學檢查

包括一般血球、電解質、腎功能、肝功能、空腹血糖值 (正常參考值：74~110 mg/dL)、三酸甘油酯值 (正常參考值：35~160 mg/dL)、總膽固醇值 (正常參考值：130~200 mg/dL)、游離甲狀腺素 (free T4)、抗核酸抗體指數及梅毒血清凝集試驗。

四、神經耳科學檢查

純音聽力檢查 (AC 40, Interacoustics, 丹麥)、眼振電圖 (NY-41, Rion, 日本)、兩耳溫差測試 (caloric test) (20°C 冷水, 20 秒) 及氣導震動式 (air-conducted vibration) 頸性前庭誘發肌性電位檢查 (cervical vestibular myogenic potential) (580-NAVPRO, Bio-Logic, 美國)。平均聽閾定義為 500 Hz、1,000 Hz 及 2,000 Hz 處之平均聽力閾值。眼振電圖包括慢速視標追蹤檢查、快速二點交互檢查、視運動性眼振 (Jung 型態) 及視運動

性後眼振。正常健康者氣導震動式頸性前庭誘發肌性電位檢查之 p13 波與 n23 波之潛值分別為 16.3 ± 3.2 與 24.4 ± 5.0 (平均值 ± 2 標準差) 毫秒，若潛值超出正負共 4 個標準差之範圍，則視為有意義的延長或縮短 [5]，而兩耳間振幅差異比應介於 -0.33 與 0.33 之間 [6]。

五、整體腦血流量測量

使用彩色超音波 (EnVisor, Philips, 美國) 測量顱外內頸動脈與兩側椎動脈的血流狀況，整體腦血流量定義為兩側內頸動脈與椎動脈平均血流量之和。正常健康者為 701 ± 208 (平均值 ± 2 標準差) mL/min [7]，若超出正負共 4 個標準差之範圍，則視為有意義的增加或減少。

結果

共挑選出 6 名患者 (男 4, 女 2)，年齡分佈為 44~73 歲，平均 57.5 歲。2 名 (病例 1 及 5) 合併糖尿病或高血症，2 名 (病例 2 及 5) 合併高血壓，1 名 (病例 4) 合併兩側持續性耳鳴、睡眠障礙、恐慌症及良性前列腺肥大。僅 2 名 (病例 1 及 5) 是陣發性的眩暈，其餘 4 名均則為持續性的頭暈，詳如表 1。

6 名均接受眼振電圖，其中 1 名 (病例 2) 慢速視標追蹤檢查呈現異常，3 名 (病例 1、2 及 4) 快速二點交互檢查呈現異常，3 名 (病例 1、3 及 6) 視運動性眼振檢查呈現異常。病例 2 罹患右側先天性小耳症 (第 3 級) 合併外耳道閉鎖，不便施行兩耳溫差測試及氣導震動式頸性前庭誘發肌性電位檢查；其餘 5 名，頸性前庭誘發肌性電位檢查均無異常發現，4 名 (病例 1、3、4 及 6) 兩耳溫差測試呈現異常。全部患者發病時與症狀緩解時之整體腦血流量，分別平均為 630.2 mL/min 與 631.0 mL/min 前後並無統計學上的差異 ($p > 0.1$, 配對 t 檢定)。

僅 1 名 (病例 5) 為左側後半規管之耳石沉著症，2 名 (病例 1 及 6) 為上前庭神經路徑功能障礙，2 名 (病例 3 及 4) 為腦幹之前庭神經核功能障礙，1 名 (病例

表 1 慢性緊縮型頭痛患者資料

病例	年齡/性別	過去病史	合併頭暈或眩暈之因
1	47/男	糖尿病、脂肪肝及高血症	左側上前庭神經路徑功能障礙
2	61/男	右側先天性小耳症 (第3級) 合併外耳道閉鎖、高血壓	至少應有兩側中樞性前庭功能障礙
3	44/男	無	兩側前庭神經核功能障礙
4	73/男	兩側持續性耳鳴、睡眠障礙、恐慌症及良性前列腺肥大	右側前庭神經核功能障礙
5	61/女	高血壓、心搏過速及高血症	左側後半規管耳石沉著症
6	59/女	無	右側上前庭神經路徑功能障礙

2) 雖無法確認是否有週邊性前庭功能障礙，但至少應有兩側中樞性前庭功能障礙，說明如後。

一、病例 1

一 47 歲男性，有第 2 型糖尿病、脂肪肝及高血脂症 10 多年。因慢性緊縮型頭痛發作 3 個月而求診，在頭痛發作期間，若不慎彎腰或頭部向後仰時會陣發 3~5 分鐘的眩暈，1 日可引發 6 次。

理學檢查呈現向右注視性眼振，搖頭測試會呈現朝向右側的眼振，姿態變換性 Dix-Hallpike 眼振測試及仰臥時頭向側轉眼振測試均無異常發現，換氣過度測試可引發一樣的眩暈。血液學檢查呈現高血糖 (185 mg/dL) 與高三酸甘油酯值 (563 mg/dL)。左右平均聽閾分別為 20 dBHL 與 25 dBHL。眼振電圖之快速二點交互檢查之眼振運動無法呈現規則的方形波，而眼球速度可見到多餘的棘狀波，向左視運動性眼振較向右解發不良。向左溫差眼振較向右弱，兩者均可受到開眼之抑制。氣導震動式頸性前庭誘發肌性電位檢查無異常發現。整體腦血流量為 692 mL/min。

在每日服用抗眩暈藥物 diphenidol、抗焦慮劑 oxazolam、降血脂藥物 atrovastatin、安眠藥 brotizolam 及乙醯化水楊酸 aspirin 3 個月後，頭痛緩解，陣發性眩暈也跟著消失，血中三酸甘油酯值已降至正常範圍 (162 mg/dL)，整體腦血流量為 690 mL/min，遂停止服用症狀治療用藥，但仍建議繼續血脂控制。爾後追蹤 5 個月，病症未復發。

二、病例 2

一 61 歲男性，罹患右側先天性小耳症 (第 3 級) 合併外耳道閉鎖，每日規則服用鈣離子阻斷劑 felodipine 或 nifedipine、血管張力素 II 受器拮抗劑 irbesartan 及 thiazide 利尿劑 indapamide 等控制高血壓已經 10 多年。在過去 12

年內，慢性緊縮型頭痛發作共計 7 次，每次發作均會持續 3 個月，並合併持續性的頭暈及不平衡感。

在第 6 次發病時，理學檢查無異常發現，血液學檢查無異常發現。純音聽力檢查顯示右耳有相當顯著的氣骨導閾值差。眼振電圖之慢速視標追蹤檢查呈現不平滑的眼球運動，快速二點交互檢查呈現鋸齒狀的眼球運動，因右側先天性外耳道閉鎖，不便接受兩耳溫差測試與氣導震動式頸性前庭誘發肌性電位檢查。整體腦血流量為 590 mL/min。

在第 7 次發病時建議每日服用乙醯氨基酚 acetaminophen、腦循環促進劑 piracetam 及抗焦慮劑 alprazolam，結果，頭痛及頭暈依然持續了 3 個月，只是程度不若之前嚴重。在狀況穩定時，眼振電圖及兩耳溫差測試並無異常發現，整體腦血流量為 609.5 mL/min，遂停止服用症狀治療用藥。爾後追蹤 1 年，病症未復發。

三、病例 3

一 44 歲男性，無系統性疾病。因慢性緊縮型頭痛發作 6 個月而求診，頭痛發作時會合併持續性的頭暈及不平衡感。理學檢查及血液學檢查均無異常發現。左右平均聽閾分別為 27 dBHL 與 30 dBHL。眼振電圖之視運動性眼振之快速相大致兩側對稱，但是，慢速相卻非徐緩的環弧形，夾雜著快速波。兩耳溫差測試均可引發兩側相當的溫差眼振，均可受到開眼的抑制，但慢速相卻出現反向的快速波 (圖 1A)。氣導震動式頸性前庭誘發肌性電位檢查無異常發現。整體腦血流量為 746 mL/min。

建議每日服用乙醯化水楊酸 aspirin、血管擴張劑 nicamete、抗焦慮劑 alprazolam 和乙醯氨基酚 acetaminophen 等症狀治療。爾後半年，病症逐漸緩解，遂停止服藥，眼振電圖及兩耳溫差測試均無異常，整體腦血流量為 744 mL/min。爾後追蹤 1 年，病症未復發。

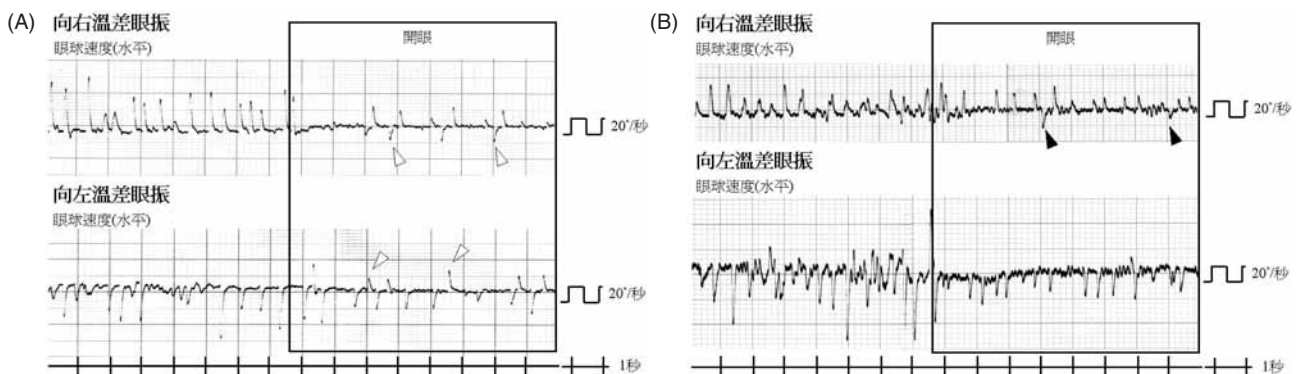


圖 1 (A) 病例 3 之兩耳溫差測試，兩側溫差眼振在開眼後會出現反向的速度波 (空心箭頭)。(B) 病例 4 之兩耳溫差測試，向右溫差眼振在開眼後會出現反向的速度波 (實心箭頭)。

四、病例 4

一 73 歲男性，罹患兩側持續性耳鳴、睡眠障礙、恐慌症及良性前列腺肥大已經 17 年，一直是規則地於睡前服用抗憂鬱劑 clonazepam 和 lorazepam，以及 $\alpha 1$ 受器拮抗劑 terazosin hydrochloride。因慢性緊縮型頭痛發作 9 個月而求診，頭痛發作時會合併持續性的頭暈及不平衡感。

一前一後步伐測試會向左側傾倒，血液學檢查無異常發現。左右平均聽閾分別為 40 dBHL 與 45 dBHL。眼振電圖之快速二點交互檢查之兩側眼球運動會有輕度的脫靶，在眼球速度相會出現多餘的棘狀波，向右溫差眼振在開眼時慢速相會出現反向的快速波（圖 1B）。氣導震動式頸性前庭誘發肌性電位檢查無異常發現。整體腦血流量為 566 mL/min。

建議處方抗眩暈藥 betahistine、腦循環促進劑 ginkgo flavone 及腦代謝改善劑 dihydroergotamine mesylate，往後半年，頭痛及頭暈逐漸緩解，整體腦血流量為 563 mL/min，遂停止服用症狀治療用藥。爾後追蹤 1 年，病症未復發。

五、病例 5

一 61 歲女性，每日規則服用血管緊縮素轉化酶抑制劑 captopril 與 β 受器拮抗劑 propranolol 控制高血壓及心搏過速已經 2 年多。因慢性緊縮型頭痛發作 7 個月及良性陣發性姿態性眩暈症發作 1 個月而求診。

左側姿態變換性 Dix-Hallpike 眼振測試為陽性，反覆的測試會使眼振消失，在施行左側 Epley 氏耳石復位術可以治癒其眩暈。血液學檢查顯示高三酸甘油酯值（414 mg/dL）與高總膽固醇（218 mg/dL）值。左右平均聽閾分別為 20 dBHL 與 18 dBHL。眼振電圖、兩耳溫差測試及氣導震動式頸性前庭誘發肌性電位檢查均無異常發現。整體腦血流量 575 mL/min。

建議每日服用腦循環促進劑 ginkgo flavone 及 pentoxifylline，以及降血脂藥 simvastatin，並未給予任何止痛劑或抗憂鬱劑。爾後 1 個月，頭痛發作逐漸減少，血中三酸甘油酯值與膽固醇值均已下降至正常範圍，整體腦血流量 577 mL/min。遂停止服用症狀治療用藥，但仍建議繼續血脂控制。爾後追蹤 1 年 5 個月，病症未復發。

六、病例 6

一 59 歲女性，無系統性疾病。因慢性緊縮型頭痛連續發作 1 年而求診，合併持續性的頭暈及不平衡感。理學檢查及血液學檢查均無異常發現。左右平均聽閾分別為 27 dBHL 與 25 dBHL。眼振電圖之兩側視運動性眼振不僅解發不良，眼球速度之快速相與慢速相均無法呈現圓弧形（圖 2A），向右溫差眼振解發不良（圖

2B）。氣導震動式頸性前庭誘發肌性電位檢查無異常發現。整體腦血流量 612 mL/min。建議每日服用抗焦慮劑 alprazolam 及乙醯氨酚 acetaminophen，往後 2 週，頭痛及頭暈逐漸緩解，整體腦血流量 602 mL/min，遂停止服用症狀治療用藥。爾後追蹤 6 個月，病症未復發。

討論

有關緊縮型頭痛的影像學研究很少，其中發現異常的機會為 0.8%^[8]，並未高於一般健康或無症狀族群，故台灣頭痛學會治療準則小組於台灣神經學醫學雜誌 2010 年 6 月版提出「對於非急性且反覆發作之緊縮型頭痛患者，若神經學檢查為正常且近期內無頭痛特徵的改變，影像學檢查並不需要」^[9]，由於本文所有患者之影像學檢查均於該文發表前 3 年所進行，當時對於慢性頭痛患者是否需要進行影像學檢查仍無定論，由於這類患者在就診時往往會很焦慮是否得了腦瘤，為了化解患者的焦慮，又要考慮到醫院健保總額，我們只能針對長時間症狀發作者或合併神經學缺損症狀者安排磁振造影。因此，已以影像學排除其他次發性頭痛之慢性緊縮型頭痛患者僅止於這 6 個案。

因為單純的頭痛患者並不會直接造訪我們，除非合併頭暈或眩暈，故無法得知慢性緊縮型頭痛患者合併頭暈或眩暈的比例。我們最初並不知道造成慢性緊縮型

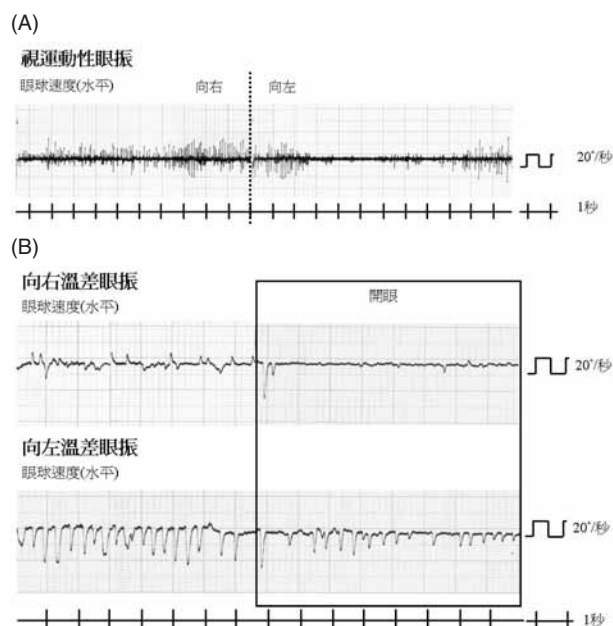


圖 2 (A) 病例 6 之兩側視運動性眼振解發不良，快速相與慢速相均無法呈現標準的圓弧形。(B) 病例 6 之向右溫差眼振解發不良。

頭痛患者之眩暈及頭暈之因，假設可能與腦缺血或椎基底動脈循環不全有關^[10-11]，故這類患者均會安排顱外血管超音波檢查以測量腦血流量，況且這種檢查不具侵入性，也無放射性。這6個案發病時與病症緩解後的整體腦血流量均位於正常標準值內，加上發病時與病症緩解後的整體腦血流量相差不多（630.2 mL/min 與 631.0 mL/min）（ $p>0.1$ ，配對 t 檢定），直立性低血壓測試均為陰性，大可排除腦血流減少或姿態性低血壓所致之病症^[12-13]，遂使本文聚焦於神經耳科學的檢查。

病例 1 及 6 之溫差測試呈現異常，但氣導震動式頸性前庭誘發肌性電位檢查無異常，表示通過上前庭神經的前庭眼反射路徑出現功能障礙，連帶影響快速二點交互檢查或視運動性眼振的表現。病例 2 因右側先天性外耳道閉鎖，不便接受兩耳溫差測試與氣導震動式頸性前庭誘發肌性電位檢查，故無法確認是否有週邊性前庭功能障礙，但單從慢速視標追跡檢查及快速二點交互檢查呈現異常推測，至少應有兩側中樞性前庭功能障礙，但無法確認究竟是大腦、中腦、橋腦、前庭神經核或小腦何處出現了障礙。病例 3 兩耳溫差眼振之快速相及氣導震動式頸性前庭誘發肌性電位檢查無異常，應無週邊性前庭功能障礙，應僅為兩側前庭神經核功能障礙，使兩耳溫差眼振之慢速相及視運動性眼振之慢速相均出現異常。病例 4 之兩耳溫差測試及氣導震動式頸性前庭誘發肌性電位檢查無異常，應無週邊性前庭功能障礙，應僅為右側前庭神經核功能障礙，使向右溫差眼振在開眼時之慢速相呈現異常，也會影響到快速二點交互檢查的結果。病例 5 在姿態變換性 Dix-Hallpike 眼振測試就可以確診為良性陣發性姿態性眩暈症，進一步安排眼振電圖、兩耳溫差測試及氣導震動式頸性前庭誘發肌性電位檢查只是確認沒有合併其他中樞性或週邊性前庭功能障礙。

84.6% (88 of 104) 之頭痛患者會合併頭暈^[14]，需考慮前庭系統的功能異常^[15]。慢性緊縮型頭痛造成頭暈或眩暈之因有以下 2 個假說：(1) 顱週肌和頸部肌肉的緊張，影響到肌肉的本體感覺受器，造成錯誤的前庭傳入訊息，會造成異常的主觀垂直視覺，卻不會影響到聽力檢查、姿態圖、兩耳溫差測試或頸性前庭誘發肌性電位之檢查結果^[14]，(2) 三叉神經之痛覺，直接活化內耳迷路內的三叉神經血管系統之感覺 C 神經纖維，使迷路血管的通透性大增影響週邊性前庭功能，或是間接經由腦幹內與前庭神經核間的聯繫，活化橄欖核耳蝸系統 (olivo-cochlear system) 之傳出纖維影響中樞性前庭功能，眼振電圖可因此測得眼振^[16]。本文抱怨陣發性眩暈之 2 名患者分別診斷為左側前庭神經病變與左側後半規管耳石沉著症，其餘抱怨持續性頭暈之 4 名患者則診斷為週邊性前庭神經病變 (1 名)、腦幹之前庭神經核功

能障礙 (2 名) 與大腦或中腦之中樞性前庭功能障礙 (1 名)。可見，週邊性前庭功能障礙與中樞性前庭功能障礙各佔一半，除了那 1 名已確診為左側後半規管耳石沉著症者外，其餘 5 名以假說 (2) 解釋較為可行。

僅僅使用止痛劑對於治療陣發性緊縮型頭痛 (episodic tension-type headache) 就會有效，但對慢性緊縮型頭痛卻非如此^[2]，一般會建議複合療法，例如抗焦慮劑或抗憂鬱劑合併止痛劑^[17]，或兩種止痛劑合併使用 (例如乙醯氨酚 acetaminophen 和乙醯化水楊酸 aspirin)^[18-19]，亦可結合壓力處理，例如放鬆和認知處理^[20]。治療慢性緊縮型頭痛合併頭暈或眩暈是否需要給予抗眩暈藥 diphenidol 或 betahistine 尚無定論，本文除了病例 5 之後半規管耳石沉著症須以 Epley 氏耳石復位術根治外，其餘 5 例之頭暈或眩暈都會緊緊伴隨著頭痛發作，當慢性緊縮型頭痛消失時，頭暈或眩暈也會跟著消失，僅 2 名 (病例 1 與 4) 曾使用抗眩暈藥。雖然目前認為頭痛與高血脂症無關^[21]，但對於合併高血脂症之 2 名患者 (病例 1 及 5)，在治療時仍給予降血脂治療，畢竟高血脂症會增加患者罹患頭暈或眩暈的機會^[22]。無論如何，無人在慢性緊縮型頭痛消失後，仍苦於頭暈或眩暈。因此，不建議對這類患者盲目地處方抗眩暈藥，只要好好地治療其頭痛，頭暈或眩暈也會跟著消失。

結 論

本文 6 名患者以男性為主，週邊性前庭功能障礙與中樞性前庭功能障礙各佔一半，除了 1 名已確診為左側後半規管之耳石沉著症者外，較可能是三叉神經之痛覺直接影響到內耳迷路之血管系統或間接影響到橄欖核耳蝸系統所致，可以適度地使用抗眩暈藥。只要頭痛消失，頭暈或眩暈也會跟著消失。

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The Dizziness or Vertigo of Chronic Tension-type Headache

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Abstract

Background and purpose: Chronic tension-type headache (CTTH) is clinically uncommon. Some sufferers also have dizziness or vertigo. We reviewed the cases we met in recent three years, and shared our experience.

Methods: We collected the patients who were diagnosed with CTTH accompanied with dizziness or vertigo, and all the patients had normal magnetic resonance images between 2008 and 2010. Physical examinations, blood examinations, neuro-otologic studies and total cerebral blood flow measurements were performed. The neuro-otologic studies included pure tone audiometry, electronystagmogram, caloric test and air-conducted vibration cervical vestibular evoked myogenic potential.

Results: Six patients were enrolled, including four men and two women. Their age was averaged 57.5 years old. Among them, only one was diagnosed with left posterior semicircular canalolithiasis; two, impairment of superior vestibular pathway; two, impairment of vestibular nucleus in brainstem; and one, bilateral central vestibular dysfunction with possible peripheral vestibular dysfunction. They were treated with combined medication. After the CTTH subsided, patients were not bothered with dizziness or vertigo.

Conclusions: Peripheral vestibulopathy is responsible for half of them, and central vestibulopathy for the other half, so anti-vertigo could be deliberately recommended. As the headache remits, the dizziness or vertigo would remit simultaneously.

Key words: chronic tension-type headache, benign paroxysmal positional vertigo, vestibular neuropathy, central vestibulopathy

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Case Report

Meningioangiomas: one sporadic case report and literature review

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Abstract

Meningioangiomas is a rare condition, probably hamartomatous, characterized by proliferation of capillary-sized vessels, meningotheial cells, and fibroblasts within the cortex of the brain. Lesions may be single in sporadic type or multiple in neurofibromatosis type II. Clinically, it presents with seizures but may be asymptomatic throughout life. A 16-year-old female experienced persistent headache, dizziness, nausea and seizure. The brain magnetic resonance imaging showed a mass at right anterior-inferior temporal lobe sized around 3 x 3 cm. The tumor was located in the cerebral cortex to the leptomeninges base on the operative finding. The lesion was characterized by a plaque-like proliferation of meningotheial and fibroblast-like cells surrounding small vessels arranged in a fascicular pattern and diffused concentric and laminated calcified nodules. Immunohistochemically, the spindle-shaped cells had a moderate to strong positivity to vimentin and CD34 and negative to epithelial membrane antigen, S-100 and smooth muscle actin protein.

Since this condition is rare, close clinico-pathological correlation is essential. A correct diagnosis avoids further aggressive treatments. We report this rare case and review of the literature.

Key words: Meningioangiomas, neurofibromatosis type II, seizure

Introduction

Meningioangiomas (MA), first described in 1915 by Basso and Nuzum as in an incidental autopsy in a boy with neurofibromatosis type II(NF-2)^[1] and named in 1937 by Worster-Drought et al^[2]. Meningioangiomas (MA) is rare benign intracranial seizure-associated lesion of presumed hamartomatous or developmental origin. It may occur sporadically or in association with neurofibromatosis (NF). The sporadic type typically presents with seizures or persistent headache, whereas that associated with NF is often asymptomatic and is diagnosed usually at

autopsy. Sporadic cases occur in children and young adults and frequently arise in leptomeninges and underlying cerebral cortex^[3,4]. The histogenesis and pathogenesis remain controversial, but its histology is unique. To our knowledge, only around 100 cases were reported in the English medical literature. We have encountered a case of sporadic MA and without NF in a 16-year-old female patient. The clinical, histopathologic, and immunohistochemical findings of this case were presented.

Case Report

A 16-year-old female experienced persistent headache, dizziness, nausea and seizures in a period of 3 months. She had no any hereditary and familial history. No neurologic abnormalities were detected by

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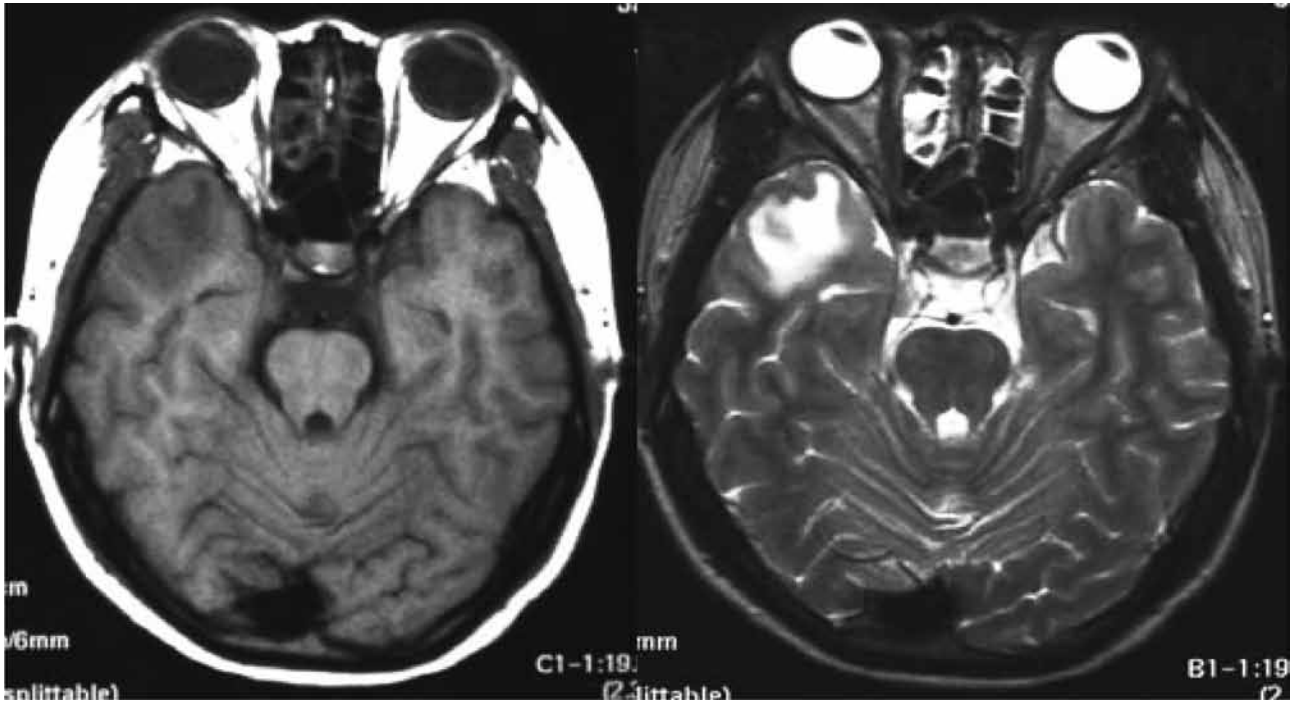


Fig. 1 Brain magnetic resonance imaging showed abnormal low T1WI and high T2WI signal intensity mass at right anterior-inferior temporal lobes that measured about 3×3 cm.

a series of physical examinations. The brain magnetic resonance imaging showed abnormal low T1WI and high T2WI signal intensity mass at right anterior-inferior temporal lobe that measured about 3×3 cm in size (Fig 1) Under the impression of meningioma, She received craniotomy and tumor removal. During the operation, an ill defined margin, hard tumor over the right anterior temporal lobe was found. The Sylvian vein was partially encased by the tumor. Grossly, the tumor was located in the cerebral cortex to the leptomeninges measured about $2.5 \times 2 \times 1.5$ cm in size, yellow to brown in color, well demarcated and firm to hard in consistence (Fig 2). Histopathologically, the lesion was confined to the cortex with focal involvement of the overlying leptomeninges, and was characterized by a plaque-like proliferation of meningothelial and fibroblast-like cells surrounding small vessels and trapping islands of gliotic cortical tissue. In the lesion, multiple concentric and laminated calcified nodules and spindle shaped cells arranged in a fascicular or storiform pattern were noted (Fig 3). The lesion does not show significant atypia, mitosis or necrosis. Immunohistochemical analysis showed the

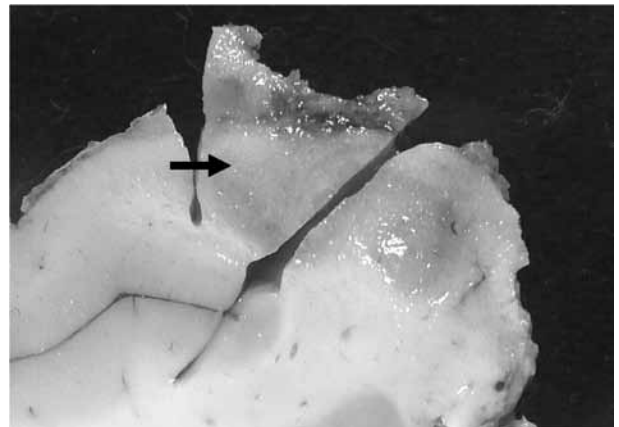


Fig. 2 On gross examination, the tumor was located in the cerebral cortex to the leptomeninges measured about $2.5 \times 2 \times 1.5$ cm in size, yellow to brown color with well demarcated edge and firm to hard in consistence (Black arrow)

cytoplasm of the spindle-shaped cells to have positivity for vimentin and CD34 and negative for epithelial membrane antigen (EMA), smooth muscle actin (SMA), S-100 protein and cytokeratins (AE1/AE3).

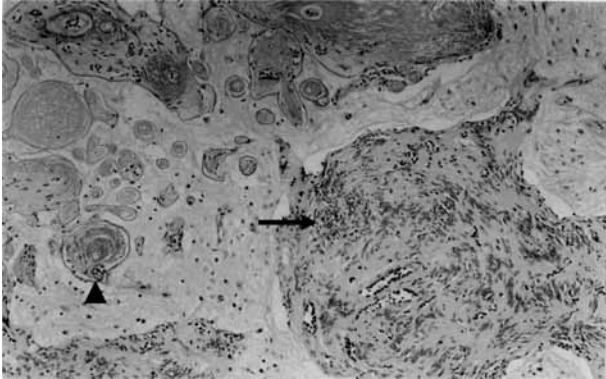


Fig. 3 Microscopic examination, multiple concentric and laminated calcified nodules on the left side (black arrow head). The meningotheelial and fibroblast-like cells surrounding small vessels arranged in a plaque-like pattern on the right side (black arrow) (H & E stain x 100).

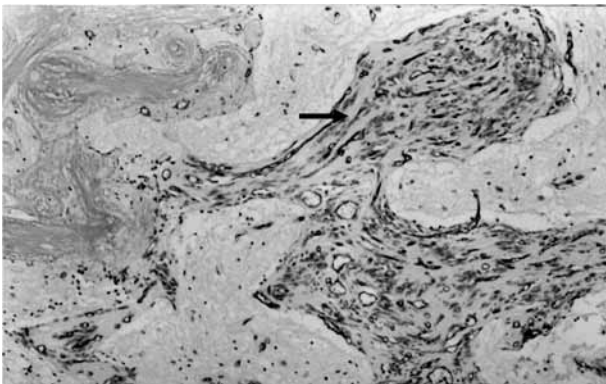


Fig. 4 Microscopic examination, the cytoplasm of the spindle-shaped cells show positivity for vimentin and CD34 and negative for epithelial membrane antigen (EMA), smooth muscle actin (SMA), S-100 protein and cytokeratins (AE1/AE3). The vascular endothelium also showed positivity for CD34 (PAP stains x 100) (black arrow)

Glial fibrillary acidic protein (GFAP) was not present in the spindle-shaped cells, but the background non-neoplastic cerebral cortex was strongly positive to GFAP (Fig 4).

Discussion

Meningioangiomas (MA), it may occur sporadically in 75% of the patients and in association with neurofibromatosis (NF) in 25% of the patients^[5]. The age distribution of patients ranges from 9 months to 70 years (average age, 28 and 21 years with and

without NF, respectively)^[5]. Clinical features includes seizures, headache, facial pain, or lower cranial nerve palsies^[6]. It has been reported that 70% of MAs are located in the fronto-temporal region of the cerebrum. The right hemisphere is affected twice as frequently as the left hemisphere, as in our case was in the right anterior-inferior temporal lobe. Multiple MA lesions have been reported in some patients with MA in association with NF^[6]. MA coexisting with meningiomas rarely been reported. Only around have 20 cases of meningioma together with MA have ever been reported in English literature to date^[6].

The pathogenesis of MA is undetermined. There are three main hypotheses^[7]: a hamartoma that undergoes degenerative changes; a cortical vascular malformation that induces proliferation of cells from vessel walls or pluripotent arachnoid cap cells in the Virchow-Robin spaces; or direct invasion of brain parenchyma by a leptomenigeal-based meningioma. Regardless of the pathogenesis, MA is, at most, a slow growing lesion.

The histogenesis of MA remains uncertain. As a result of an inconstant immunostaining profile, the histogenesis of MA has been variably suggested as meningeal, pericytic or perivascular neural plexus origin^[6,8]. However, ultrastructural findings of desmosomes and interdigitating cell membranes in the fibroblast-like cells of some MA lesions are suggestive of meningotheelial differentiation^[8,9]. Paulus and colleagues have concluded that the fibroblast-like cells are probably of meningotheelial origin rather than of glial, Schwann cell, endothelial or smooth muscle origin in an immuno-histochemical analysis of cells and collagen types in MA^[10]. On CT scan, MA present as a calcified enhancing lesion with surrounding low-density edema. In Yao et al^[12], report of 7 cases, 5 lesions illustrated calcification on plain CT scan, and the calcifications were nodular, patchy, or dotted in shape. The lesions with calcification could be easily identified on plain CT scan. However, non-calcified isodense lesion may be missed out. On MRI, MA exhibited central low- or mixed-signal intensity on T1WIs and T2WIs and surrounding high-signal edema on T2-weighted sequences. Gadolinium enhancement was seen in some of the lesions^[6,12]. The presence of calcification on CT and a low signal intensity rim on T2-weighter MRI images are the most helpful features that suggest the diagnosis of MA^[13].

At surgery, the tumour appeared to involve a

widened gyrus and was fibrous in appearance. The lesions are usually firm and well demarcated from the surrounding cerebral tissue. All of the tumours were confined to the cortex, with variable involvement of the overlying leptomeninges^[13].

Histopathologically, MA is characterized by a plaque-like proliferation of meningotheial and fibroblast-like spindle cells surrounding small vessels and trapping islands of gliotic cortical tissue. The lesion does not show significant atypia, mitosis or necrosis. Although all cases of MA share unifying features, there are different degrees of histological presentation with some cases predominantly cellular and others more fibrous and calcified^[4,5]. Wang et al classified MA into 3 types: predominantly cellular type, vascular type, and fibrocalcifying type^[4]. This could correspond to different stages in the evolution of the MA. In our case, diffuse concentric and laminated calcified nodules were found (Fig 3). The immunohistochemical results, including vimentin, CD34, were always positive but positive for EMA was controversial^[5,11]. Although EMA positive staining has been reported previously in MA, it is not a consistent characteristic of the lesion^[5]. In our case, staining for EMA, a marker for arachnoid cap cells, is negative in the cortical perivascular whorls areas. Regardless its etiology, MA should be categorized as a hamartoma or malformative lesion rather than a neoplasm in nature.

The seizure-free rates after lesionectomy are variably, Tumor resection may afford improvement in between 43-68% of the cases, but almost 70-80% of the patients continued to required antiepileptic drugs^[14]. This patient had no clinical symptoms post-operatively and was discharged without adjuvant radiotherapy or chemotherapy. Neither MA recurrence nor seizures were found during a period of 12-month postoperative follow up.

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腦膜血管瘤：偶發病例報告及文獻回顧

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摘要

腦膜血管瘤是一少見的過物瘤病變，其特徵是在大腦皮質出現腦膜細胞、纖維母細胞及微血管增生性病灶，在偶發性者通常是單一病灶，但在第 2 型纖維神經瘤病者，通常是多發性病灶，臨床上以抽痙為主要症狀，但有些病例則可能終身無任何症狀發生。一位 16 歲女性持續性頭痛、頭暈、噁心及抽痙等症狀，腦部核磁共振檢查發現右前下顳葉有一 3 x 3 公分的腫瘤，開刀發現此腦瘤位於腦皮質與腦膜間，組織學上此病灶由腦膜細胞、纖維母細胞及微血管增生糾結纖維成斑塊狀並混以鈣化性結節，免疫染色發現梭形細胞呈 Vimentin 及 CD34 陽性反應而 EMA、S-100 及 SMA 呈陰性反應，組織學上此為一典型腦膜血管瘤，此一病灶由於少見，正確的臨床與病理診斷將可避免過度侵襲性治療，本文報告此一罕見病例並做文獻回顧。

關鍵詞：腦膜血管瘤、第 2 型纖維神經瘤、抽痙

Case Report

慢性胰臟炎合併膽道阻塞—病例報告及文獻回顧

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摘要

慢性胰腺炎的特徵是胰腺組織結構性破壞及內外分泌功能之損害。胰腺炎可由各種原因導致實質局部性，節段性或瀰漫性纖維化。本文報告一 46 歲男性患者於住院前上腹部持續疼痛 7-8 天，發燒、黃疸及脂肪瀉，同時伴有血清澱粉酶及解脂酶上升。過去病史中有長期每日喝酒長達 30 年，吸菸數年。住院後超音波及電腦斷層檢查發現主胰管經副乳頭引流進入十二指腸，胰臟組織內有眾多結石。經內視鏡逆行性膽胰管造影術見遠端總膽管與胰臟頭部交會處因胰腺纖維化壓迫該節段膽管，造成阻塞性黃疸，經乳頭切開術，置入導管引流，病況獲得改善，病患於 3 天後出院。此外還發現有分裂性胰腺，主胰管經副乳頭出口至十二指腸。慢性胰腺炎之致病機轉很多，本篇將探討各種致病機轉及治療之策略。

關鍵詞：慢性胰臟炎、分裂性胰臟、內視鏡引流術

前言

急性胰腺炎與慢性胰腺炎之分別在於前者經發炎後，胰臟功能能夠可逆性恢復，後者則只會繼續進行性破壞，發展至腺體壞死，纖維化及萎縮，在結構和功能上不可逆之損害^[1-2]。臨床上，急性胰腺炎相當常見，但慢性胰腺炎相對地較少，在過去一直認為急慢性胰腺炎之致病機轉是截然不同，近年來學者提出更多之假說論述其機轉。典型的慢性胰腺炎症狀及檢查容易被診斷，但早期慢性胰腺炎之診斷，不管透過症狀、影像學和胰腺功能檢查，其敏感度差，所以真實的流行病率及發病率均被低估。今提出一病例，同時存在數個病因所致。近年被提出之致病機轉很多，在此將文獻回顧以及作一綜合性討論。

病例

病患 46 歲男性，具長期飲酒病史長達 30 年，且有抽煙習慣 10 多年，近年戒絕，無其他病史。過

去偶爾發生腹痛，但均未有診斷為胰臟炎。無手術病史。第一次住院前三、四天，因嚴重上腹疼痛，同時有放射性背痛、噁心、嘔吐、深度黃疸，伴有高度發燒及脂肪瀉，失眠，被送至當地醫院求治。理學檢查有黃疸、上腹部壓痛、背部敲擊性疼痛，實驗室檢查：血醣 218 mg/dL, CRP 7.8 mg/dL, GPT 364 U, total bilirubin 4.2mg/dL, lipase 695 U, 腹部超音波術見中度脂肪肝，總膽管擴張及慢性胰腺炎，上消化道內視鏡檢查發現十二指腸紅腫，疑為局部缺血性變化。電腦斷層攝影術見近端總膽管擴張，遠側狹窄，疑似總膽管結石阻塞；同時發現胰腺腫大，尤其胰臟頭部，胰臟實質內及沿主胰管週圍有眾多鈣化結石阻塞，診斷為慢性結石性胰腺炎。由於疼痛與發燒仍然持續，在住院後第三天轉送本院治療。入院時臆診為酒精長期飲用引致之慢性結石性胰腺炎，同時併有總膽管結石所致的急性膽管炎。住院後理學檢查呈黃疸，無貧血徵狀，意識清楚，體重 72 kg, 身高 176 cm, 血壓 131/91 mmHg, HR 55/min, RR 19/min, 體溫 39.4°C, 除鞏膜黃染外，耳鼻喉均無異樣，頸部柔軟，無甲狀腺腫大，無觸摸到淋巴結，胸部兩側對稱擴張，呼吸音正常，無心臟雜音，腹部柔軟，無腹部腫塊，肝脾均無腫大，腸音活動正常，唯上腹有明顯壓痛，腹部

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無手術疤痕，背部有輕度敲擊痛，四肢活動正常，神經學檢查正常。實驗室檢查 WBC 6900/ μ l；neutrophils 87.6%；Hgb 12.9g/dL，Hct 38.2%，GOT 106 U，GPT 230 U，total bilirubin 5.4mg/dL，GGT 1066 U，TG 162 mg/dL，TC 158mg/dL，amylase 218 U，lipase 304 U，CRP 7.0 mg/dL，HBsAg 及 antiHCV 均為陰性反應。上消化道內視鏡檢查見 Grade B 逆流性食道炎，檢視電腦斷層之影像發現胰腺腫脹，並確認有分裂性胰臟，主胰管經 Santorini 氏管通過副乳頭，引入入十二指腸（見圖 2），主胰管週圍及胰組織內有眾多結石生成。經逆行性胰膽管造影術（ERCP）證實為分裂性胰臟（pancreas divisum），Wirsung 氏管短小，與總膽管會合後，經由 Vater's ampulla 排出至十二指腸。主胰管並未顯影。總膽管遠端狹窄，近端擴張蓋因慢性胰腺炎於頭部壓迫總膽管（見圖 1），無膽管結石，經十二指腸乳頭括約肌切開術，並置入塑質導管作膽汁引流，術後給予抗生素 Ceftriaxone 注射，低劑量口服降血糖劑及胰酶，總膽紅素即降至 1.7 mg/dL，十天後降至正常，r-GT、GOT 及 GPT 在十二天後亦降至正常，術後未見發熱，疼痛緩和，黃疸消退，術後三天出院。

討 論

慢性胰臟炎是指由於各種原因所致的胰腺實質局部性，節段性或瀰漫性的慢性進展性炎症，可引起胰腺壞死，纖維化，腺泡及胰島細胞之萎縮及消失，導致胰腺組織結構和功能不可逆之損害。急慢性胰腺炎之分別在於是否為永久性之損害^[3-4]。慢性胰腺炎常伴有胰腺瀰漫性鈣化，胰管內結石及假性囊腫之生成。臨床之表徵為反復發作性或持續性腹痛，部分患者會隨疾病之進展，疼痛反而會緩和下來，脂肪瀉，體重減輕，消瘦，黃疸，腹部腫塊及糖尿病等會在晚期發生^[5]。

慢性胰腺炎在全球各地流行率與發病率差異很大，在西方國家的流行率為 10/10 萬至 27/10 萬，發病率為 4/10 萬至 8.7/10 萬，尤以北歐諸國較高，亞洲各國偏低，在台灣未有確實之統計數字，普遍上不常見。由於目前診斷慢性胰臟炎之各種方法，尤對早期慢性胰臟炎的敏感度差，故此，無論是流行率還是發病率均低於真實情況。因近年飲酒之民眾倍增，此疾病已經不屬少見，目前世界各地均呈上升之趨勢^[6]。

慢性胰臟炎之發病機轉包括了毒性代謝產物，胰管梗塞，氧化應激反應（oxidative stress），壞死-纖維化^[7-8]。近年來有學者提出新的假說：慢性胰臟炎始於胰管原發性之自體免疫性炎症反應，酒精及毒性代謝產物可以改變胰管上皮的靶抗原（target antigen），或對胰管上皮產生直接毒性損害，胰管內之蛋白栓子及結石形成（protein plug hypothesis）^[9]造成胰液、毒性膽汁及十

二指腸液淤塞在胰管內，從而觸發炎症反應。另有一派認為炎症始於胰腺細胞經毒性代謝產物（toxic metabolite hypothesis），如酒精，毒物，氧化應激反應引起胰腺腺泡細胞的損害，導致胰蛋白酶原被活化，產生以促炎細胞和細胞因子組成的早期炎症反應，所謂炎症介質與細胞因子，包括氧自由基、前列腺素、一氧化氮、胰血管舒緩素、激肽系統、補體、黏附因子、單核細胞趨化蛋白-1、IL-1、IL-2、IL-6、IL-8、IL-10、IL-18、血小板活化因子、腫瘤壞死因子及其受體、NF- κ B 等



圖 1 Wirsung 氏管短小，未能接續至主胰管，主胰管不顯影，總膽管遠端狹窄，置入導管引流。



圖 2 分裂性胰臟，主胰管出口於副乳頭，胰臟頭部內有眾多結石。

等。如果能快速移除這些因素，炎性反應可以恢復，但若胰腺細胞因子持續地分泌，進一步可激活胰腺內組織的星狀細胞分泌膠原，促使胰腺纖維化和慢性胰腺炎之形成^[10-11]。氰化物 (cyanide toxicity) 對胰腺傷害亦屬之。兩次打擊說 (two-hits theory)：即胰管之淤塞促發腺泡損害，反之，腺泡發炎亦可誘發胰管病變。親電子性應激說 (electrophilic stress theory)：胰臟和肝臟相似，如同 paracetamol 或四氯化碳對肝之毒害，胰臟亦可由於麩氨基硫 (glutathione) 的不充分保護，受到親電子性攻擊。病患年來反覆暴露在多種的異型生物質 (xenobiotics)^[8]—菸、酒、葯物及揮發性碳氫化合物，再加上食物中缺少甲硫氨酸 (methionine)、維生素 C、E 及硒 (selenium)，使自由基氧化產物 (free radical oxidation products) 更容易轉移至組織間隙中，使肥大細胞脫粒化 (degranulation)，促使發炎反應及纖維化。將上述的假說揉合為一 (multiple-cause theory)，如再加上胰臟缺血，更易加重發炎過程^[1]。在過往，一直認為急性胰腺炎與慢性胰腺炎是各自獨立的疾病，兩者致病機轉截然不同，但近年 Kloppel 和 Mallet 提出的壞死-纖維化序列假說^[12]，又重新確認急性胰腺炎可導致慢性胰腺炎之可能性。DiMagno 認為胰腺腺泡損害的程度決定了慢性胰腺炎發病機轉及自然病程^[3,13]。

慢性胰腺炎由病因學分類，即毒性代謝產物、特發性、遺傳性、自體免疫性、梗塞性和復發性重症急性胰腺炎所致^[8]。在不同的國家和地區，隨地理環境，經濟狀況，生活習慣，種族遺傳的不同；各地的發病率和病因差異很大。在西方國家，酒精導致之慢性胰腺炎佔 70% 以上。長期飲用酒精，只有部份患者罹患酒精性肝炎，同樣，大量長期飲用酒精，不到 10% 病患會引起慢性胰腺炎，這表示除酒精以外，仍應有其他的因素（見下不同機轉及原因）摻和在其中。酒精性胰腺炎的發病機轉可能是酒精及其代謝產物激活胰蛋白酶原生成胰蛋白酶，導致胰腺組織內自身性消化 (auto-digestion) 損傷，發炎與壞死，酒精又可通過刺激胰液之分泌，增加對膽囊收縮素 (cholecystokinin) 刺激的敏感性，使胰液中水份減少，蛋白質含量增加，鈣離子濃度增高，粘稠度提升，使易形成胰管內蛋白沉澱 (protein plug) 及結石，淤塞胰管^[11]。另一方面，酒精還可作為調節因素干擾胰腺自身之調節過程，其可能的機制包括了擾亂胰腺正常神經的內分泌調控系統，引起免疫系統失調，損害胰腺細胞線粒體，活化炎症轉錄因子 NF- κ B，進而降低發生急性胰腺炎之閾值。

膽道疾病是否能導致慢性胰腺炎，在亞太國家和歐美之間存在很大不同看法。西方學者認為膽道結石幾乎不會導致慢性胰腺炎，但由文獻中有 8-12% 的慢性胰腺炎病例伴有膽道疾病。在中國大陸，膽道疾病是慢性胰腺炎最常見之病因，約占 46.5%^[14]，近年呈下降的趨

勢，原因是酗酒的民眾上升，酒精導致之慢性胰腺炎之比例升高。又膽道結石及炎症感染因症狀明顯，容易被發現，較諸過往，病患得以及早治療移除始動因素，使繼續發展成慢性胰腺炎之機會減低。膽源性胰腺炎的發病機轉是因為 50-70% 患者總膽管和胰管共同開口在十二指腸乳頭，當炎症感染或結石可引起總膽管開口及胰管開口交界處的狹窄或梗塞，使胰液流出受阻，胰管內壓力上升，最後導致腺泡及小導管破裂，胰腺組織及胰管系統損傷。

在慢性胰腺炎中有所謂慢性阻塞性胰腺炎 (chronic obstructive pancreatitis)，其病因是胰臟本身異常的結構所致^[15]，如分裂胰腺 (pancreas divisum)，環狀胰腺 (annular pancreas)，十二指腸乳頭狹窄，胰管內疤痕生成，胰臟腫瘤，十二指腸乳頭附近憩室，胰臟外傷等，其中尤以分裂性胰腺最為常見。

本個案除了大量酒精飲用引起慢性胰腺炎，此次住院因疼痛、發熱及阻塞性黃疸，初步疑似為慢性胰腺炎急性發作，因膽道內結石所致之膽管炎，住院後進行 ERCP 檢查，發現總膽管近端擴張，遠端狹窄，並無膽管結石，乃因為慢性胰臟炎，胰臟頭部纖維化嚴重，壓迫總膽管所致，經乳頭切開術及總膽管內置入導管，使膽汁暢流，黃疸症狀迅促得以改善。在進行 ERCP 時僅發現短小之腹側胰管，未見主胰管顯影。再度核對電腦斷層攝影時可見胰腺頭部有眾多鈣化結石生成，主胰管經由 Santorini 氏管，通過副乳頭，流入十二指腸，可證該患者同時併有分裂性胰臟，此亦可能是該患者慢性胰腺炎之成因。

分裂性胰臟之形成乃是在胚胎發育過程中；腹側胰腺未能融合又或融合不完全到主胰管，腹側與背側胰管各自生成導管系統注入十二指腸。正常的情況下，腹側之導管為 Wirsung 氏管，與主胰管融合連接，開口在主乳頭，成為主要導管系統。背側胰管則開口於副乳頭稱 Santorini 氏管，胚胎發育過程中，主胰管仍與 Santorini 管接連，成為主幹經副乳頭出口即為分裂胰腺。分裂胰腺導致慢性胰腺炎之發病機轉是因為胰液無法順利通過狹窄的副乳頭引流，使胰管內壓上升之故。當然並非所有分裂性胰腺均會導致慢性胰腺炎。Cotton 報導在其 169 位接受 ERCP 檢查時發現有六位 (3.6%) 分裂性胰腺。在 177 位復發性胰腺炎患者接受 ERCP 檢查，高達 29 位 (16.4%) 有分裂胰腺。在 78 位特發性慢性胰腺炎患者當中有 20 位 (25.6%) 具分裂性胰腺^[16]。Mittchell 等發表 449 位接受 ERCP 檢查，檢出 21 位 (4.7%) 為分裂胰腺，其中 4 位 (19%) 具慢性胰腺炎^[17]，由高比例發生胰腺炎可證分裂胰腺確係引發慢性胰腺炎之成因之一。

其他較少見之病因如自體免疫性胰腺炎，熱帶性胰腺炎，遺傳性胰腺炎，葯物的使用與環境因素等。近

年來更多的報導自體免疫疾病相關的慢性胰腺炎^[18]，主要包括系統性紅斑狼瘡，乾燥症候群，克隆氏病，潰瘍性大腸炎，原發性膽道硬化症等，組織病理學特點是以 CD4+T 細胞為主的淋巴細胞浸潤，血中 IgG4 上升，此類患者對固醇類治療反應良好^[19]。熱帶性胰腺炎 (tropical pancreatitis) 多發生在亞洲，非洲及南美等國，尤以印度南部，其流行率高達 1/800，原因不明，可能與營養不良有關，當地人以木薯為主食，可能因攝入過多氰化物有關^[20]。近年發現熱帶性肺炎與遺傳性肺炎有很多相似的地方^[21]。遺傳性胰腺炎的機轉一直到 1996 年才較被了解，有些是常染色體顯性遺傳，有些是隱性遺傳，主要是 PRSS1 (cationic trypsinogen gene)，SPINK1 (serine protease inhibitors, Kazal type 1) 及 CFTR (cystic fibrosis transmembrane conductance regulator)^[23] 三種基因突變，PRSS1 突變具活化或去活化消化酶起關鍵性的作用，它使各種消化酶被水解的作用消失，胰腺組織內過多的消化酶將導致胰腺炎症，破壞其結構。SPINK1 基因突變可損害胰腺腺泡細胞，抑制或對抗細胞內活化的胰蛋白酶潛在的破壞作用^[10]。CFTR 突變能減少胰腺碳酸氫鹽之分泌，容易生成蛋白質栓子，而且可導致細胞膜不穩定而破壞^[23]。其他的危險因子尚有抽菸，高脂肪及高蛋白飲食，男性，黑種人，低教育水平均有較高的發病率，像乙型肝炎，柯薩奇病毒 (Coxsackie virus) 感染均會引起急性胰腺炎。

慢性胰腺炎之診斷依據為慢性上腹疼痛，脂肪瀉，胰腺內、外分泌功能異常及影像學上之變化，本個案有明確之長期酗酒病史長達數十年，患者過去常有上腹部疼痛，但程度不一，大多為隱痛、鈍痛為主，亦有放射至後背，併有噁心。此次住院蓋因胰臟頭部炎症及纖維化壓迫總膽管，引起黃疸及膽管炎、發燒、上腹劇痛，發病前有斷斷續續的脂肪瀉，住院時有血糖上升，需使用降血糖藥物調控。慢性胰臟炎所致之內、外分泌功能缺損往往發生在慢性胰臟炎之晚期，平均在罹患該病後 15 年才呈現出來，在型態學上，胰組織出現萎縮及纖維化多在罹病後兩、三年後，鈣化及結石最早出現平均都在 5 年以後，故此，在慢性胰臟炎早期不一定出現所有病徵，這亦是慢性胰臟炎流行率與發生率，均低於實際發病率之原因之一。

在缺乏組織學佐證作為診斷依據的情況下，影像學檢查更形重要。可以協助作為慢性胰腺炎診斷的包括了腹部 X 光、超音波、電腦斷層攝影、內視鏡超音波術、逆行性胰膽管造影及核磁共振檢查等。腹部 X 光平片在部分患者可見沿胰腺分布之鈣化斑點或結石。超音波及內視鏡超音波可見胰腺腫大或縮小，回音增強，胰管不規則擴張及管壁回聲增強，部分病例可見結石及鈣化之聲影，如有囊腫形成時可見液性暗區。電腦斷層攝影可見胰腺體積漲大或縮小、邊緣不清楚、密度降低、

胰腺鈣化是慢性胰腺炎的特徵。多沿胰管分布，呈結節狀、斑點狀、條索狀或星狀。結石不一定在胰管內，亦可在胰腺組織中。胰管及其分支呈不規則擴張有些可見胰腺內或胰腺周圍有假性囊腫，積液及胰腺周圍筋膜增厚。核磁共振可發現鈣化病灶呈低訊號強度，如出現假性囊腫，則呈境界清晰的低訊號強度，而 T2 訊號會增強，主胰管呈不規則擴張、扭曲、呈念珠狀，甚或囊狀擴張。

逆行性胰膽管造影是目前診斷慢性胰腺炎的最佳選擇，敏感度及特異性分別為 90% 及 100%，胰管呈多發性狹窄及擴張相間甚或中斷，其分支可形成囊狀擴張。本個案住院時 KUB 可隱約見鈣化斑點，集中在胰腺頭部。腹部超音波見脂肪肝，總膽管近端狹窄，遠端擴張，結石及鈣化沿胰腺分布，且具聲影，主要集中在胰腺頭部。電腦斷層攝影發現胰腺組織內有斑點狀鈣化，胰頭部腫大及膽管壓迫，且確認有分裂性胰臟。逆行性胰膽管造影見分裂性胰臟，主胰管未顯影，總膽管近端擴張，遠端狹窄，乃因胰腺炎頭部腫大壓迫總膽管所致。Wirsung 氏管短小，與總膽管匯流後，經 ampulla Vater 進入十二指腸。

本病難以根治，主要是去除病因，積極補充胰腺分泌功能之不足，防止急性發作，如抑制胰酶分泌、止痛等。去除誘因包括禁酒和治療膽道疾病等。對高血脂症者宜飲食控制，必要時使用降血脂藥物。飲食方面，可給予高熱量、高蛋白、高糖、低脂飲食，補充脂溶性維生素，進食時避免過飽，胰酶製劑可緩解疼痛，嚴重疼痛可使用非類固醇抗炎製劑或麻醉止痛劑，頑固性疼痛可經由內視鏡超音波或電腦斷層引導下行腹腔神經叢阻斷。如患者發生糖尿病，可給予口服降血糖藥物或小劑量胰島素注射，脂肪瀉可給予胰酶製劑，嚴重吸收不良可使用要素飲食甚或胃腸道外之營養補充。

胰管狹窄與結石梗塞是慢性胰腺炎最常見之併發症，通過 ERCP 進行胰膽道減壓是最有效之治療方式，按胰管的情況選擇不同的治療術式，如乳頭括約肌切開術 (EST)，副乳頭切開術，胰管內引流術，結石摘取，鼻胰管引流，氣球擴張術，胰管支架置放治療管道狹窄等^[24-25]。本個案之結石主要分布在胰腺組織內，故無法透過內視鏡摘除，僅作乳頭括約肌切開，置放多條導管擴張狹窄之總膽管作引流。Cahen 等人建議使用 10Fr 的支架，每三個月或當支架阻塞時置換，為期一年，合併急性胰腺炎為預測是否改善的重要依據。持續超過一年的支架置放，並不能得到更大的好處^[26]。對伴有頑固性疼痛，經內科治療無效，尤以胰管不擴張，胰組織纖維化，不適合引流者，宜採外科治療。

本個案雖然在影像學上可明確認定為慢性胰腺炎，且有輕度脂肪瀉斷斷續續，輕度血糖上升，平日僅輕度腹痛，此次住院蓋因胰臟頭部炎症及纖維化壓迫總膽管

引起黃疸及膽管炎，通過 ERCP 進行膽管減壓（狹窄擴張，取石及十二指腸乳頭切開術，支架置入）是最有效之治療方式 [24-25]。病患罹患慢性胰腺炎之原因為長期酗酒、吸菸和先天上分裂性胰臟之故，勸導病患戒酒是重要。

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Chronic Pancreatitis with Biliary Obstruction: A Case Report and Literature Review

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Abstract

Chronic pancreatitis is characterized by destruction and loss of exocrine parenchyma that may be focal, segmental, or diffuse, as well as by fibrosis of the pancreas. We reported a 46-year-old man who presented with high fever, epigastric pain for 7-8 days, marked jaundice and steatorrhea with increased serum amylase and lipase. The patient has history of regular consumption of alcohol daily for approximately 30 years, and smoking for many years. Sonogram and computed tomography showed drainage of dorsal pancreatic duct via minor papillae, calcification of pancreas head, and dilation of proximal bile duct. The distal common bile duct that transverses the head of the pancreas was involved as a result of fibrosis of the region, and patient revealed as obstructive jaundice which was proved by endoscopic retrograde cholangiopancreatography. Besides, pancreas divisum was found on ERCP in this patient. Stricture of the common bile duct was bridged by implantation of a plastic stent after papillotomy. Patient was discharged 3 days after this procedure. Toxic metabolites, unopposed free-radical injury, and genetic mutations that promote premature activation of trypsinogen to trypsin within the acinar cell are associated with the pathogenesis of chronic pancreatitis.

Key words: Chronic pancreatitis, Pancreas divisum, Endoscopic drainage

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Case Report

Epidermoid Cyst of the Testis: Radiologic-Pathologic Correlation, A case report

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Abstract

Epidermoid cysts are rare benign tumors of the testes. We present a 17-year-old man who suffered from a right testicular mass for one year. Physical examination confirmed a 2 cm, hard, nontender testicular mass. Sonographic findings demonstrated a 2.0 x 1.7 cm round, well-defined intraparenchymal cystic lesion with hyperechoic wall, hypoechoic center and with "target" or "bull's eye" picture located in the lower pole. Serum α -fetoprotein (AFP), human chorionic gonadotropin (HCG) levels were normal. A right epidermoid cyst of the testis was our impression preoperatively, and the conservative management (enucleation with testicular preservation) was performed rather than orchidectomy. In addition, we review the literature and discuss the radiologic-pathologic correlation.

Key words: epidermoid cyst, enucleation

Introduction

Epidermoid cysts of the testis are uncommon and account for 1.5%~2% of testicular Tumors.^[1] First described in 1942 by Dockerty and Priestley.^[2] The right testis is involved somewhat more frequently than the left testis.^[3] Generally, most patients present with a painless nodule.^[3] The histogenesis of epidermoid cyst is not completely understood, but most investigators suggest that these tumors are a monodermal development of a teratoma without evidence of malignancy.^[4]

The radiological characteristics of epidermoid cysts of the testis have been described and correlated well with the histopathological findings.^[5,6] Because testicular epidermoid cysts are benign, a cure is possible if the mass is completely resected. Recently, organ-preserving surgery has become favored over

the traditional inguinal orchiectomy.^[1] Herein, we present a case of an epidermoid cyst and review the recent literature and discuss the radiologic-pathologic correlation and surgical management of this disease.

Case Report

A 17-year-old man presented with a 1-year history of a right testicular mass noted by self-examination. Physical examination confirmed a 2 cm, hard, nontender testicular mass. Sonographic findings demonstrated a 2.0 x 1.7 cm round, well-defined intraparenchymal mixed echo lesion in which showed "target" or "bull's eye" feature. The surrounding parenchyma and the right epididymis were normal (Fig 1). Serum α -fetoprotein (AFP), β -human chorionic gonadotropin (β -HCG) levels were normal. With the preoperative diagnosis of a epidermoid cyst or other benign lesion, the right testis was approached by a scrotal incision, and the mass was enucleated from the testicular parenchyma. At gross examination, the specimen consisted of a well demarcated and encapsulated soft white lesion measuring 1.7 x 1.4 x 1.0 cm.

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Fig. 1 Sonographic findings demonstrated a 2.0×1.7 cm round, well-defined intraparenchymal cystic lesion in which showed “target” or “bull’s eye” feature (white arrow). The surrounding parenchyma was normal.

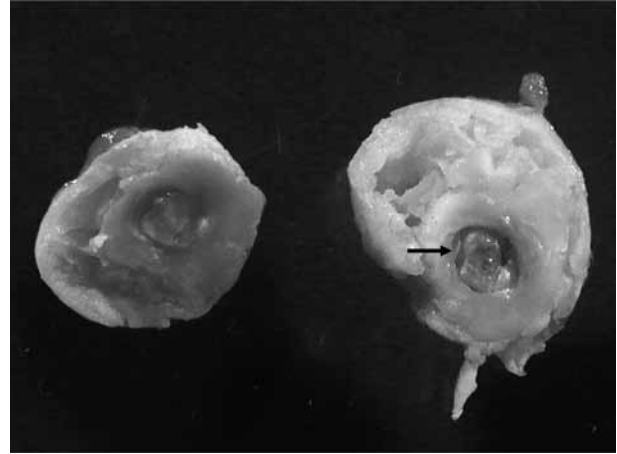


Fig. 2 Gross examination, the specimen consisted of a well demarcated and encapsulated soft white lesion measuring $1.7 \times 1.4 \times 1.0$ cm. Bisection of the lesion revealed a with concentric rings of white-yellow amorphous and pastelike material within the lesion. The lesion also showed “target” or “bull’s eye” feature (black arrow) (Fig 2).

Bisection of the lesion revealed a with concentric rings of white-yellow amorphous and pastelike material within the lesion. The lesion also showed “target” or “bull’s eye” feature (Fig 2). At microscopy, keratinizing squamous epithelium was seen to surround the keratin-filled and liminated cyst. The lumen of the cyst contains keratinized debris. A few of adjacent normal tubules were found. There was no evidence of mature teratoma present (Fig 3).

Discussion

Epidermoid cysts of the testis are uncommon and account for 1.5%~2% of testicular tumors.^[1] First described in 1942 by Dockerty and Priestley.^[2] The histogenesis of epidermoid cysts is not completely understood, but most investigators suggest that these tumors are a monodermal development of a teratoma without evidence of malignancy.^[4] The majority of patients are in the 2nd to 4th decades of life, although patient age ranges from 3 to 77 years old.^[3] The reported cases have occurred in Coccasion and Asian.^[3] The right testis is involved somewhat more frequently than the left testis.^[3] There has been one case report of bilateral epidermoid cysts, whereas there have been four reported cases of multiple epidermoid cysts.^[3,7] Patients with multiple epidermoid cysts have included one with Gardner

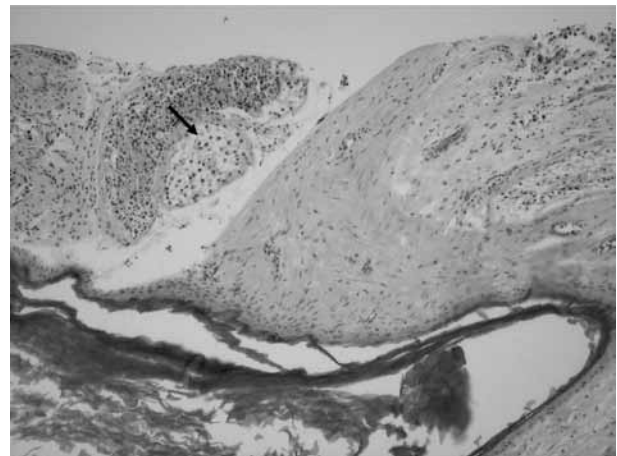


Fig. 3 Microscopic examinaiton, keratinizing squamous epithelium was seen to surround the keratin-filled and liminated cyst. A few of adjacent normal seminiferous tubules were found (black arrow).

syndrome, two with Klinefelter syndrome, and one with a microscopic focus of primary carcinoid tumor in the epidermoid cyst wall.^[3,7]

Multiple epidermoid cysts are occasionally found in cryptorchid testes.^[3,7] The clinical manifestation of epidermoid cyst is indistinguishable from that of the much more common malignant germ cell tumor. Most patients are asymptomatic, with

the mass being detected either by self-examination or during physical examination as a smooth, firm, painless mass with a mean diameter of 2-3 cm.^[3,7]

A minority of patients experience scrotal pain, scrotal enlargement, or vague discomfort.^[3,7]

There are several different theories about the embryologic origin of this lesion. Metaplasia of the seminiferous epithelium or rete testis has been suggested.^[3,7] But most investigators suggest that these tumors are a monodermal development of a teratoma without evidence of malignancy.^[4]

Sonography has been the mainstay for the preoperative diagnosis of epidermoid cysts and reveals a well-circumscribed, intratesticular lesion with normal surrounding testis. The lesion can contain a hypoechogenic concentric ring surrounding an echogenic center, with or without a hyperechogenic rim ("bull's-eye" or "target" appearance), or it can contain alternating hypoechogenic and hyperechogenic concentric rings (onion ring appearance).^[8,9] In some studies, investigators incorporated the use of magnetic resonance (MR) imaging. In one study,^[10] the mass was shown to have a peripheral rim with low signal intensity on both T1- and T2-weighted images and a circumferential zone of higher signal intensity surrounding a low-signal-intensity central zone. In the other study,^[8] investigators described alternating concentric rings of low and high signal intensity on T1- and T2-weighted images. The central echogenic center seen at US corresponds to the lower-signal-intensity zone seen at MR imaging and is thought to represent the keratin debris.

The pathologic diagnosis of epidermoid cyst is based on criteria proposed by Price: (a) the lesion must be cystic and intraparenchymal; (b) the lumen should contain keratin with no teratomatous elements or dermal adnexal structures such as sebaceous glands or hair follicles; (c) the walls of the cyst should be composed of fibrous tissue with a complete or incomplete inner lining of squamous epithelium; and (d) the remaining testicular parenchyma may be atrophic but must not contain teratomatous elements, in situ germinal tumors, or scarring.^[4]

The radiological characteristics of epidermoid cysts of the testis have been described and correlate well with the histopathological findings.^[5,6] The sonographic features include a sharply defined mass with a hyperechoic rim (representing the fibrous

wall of the cyst) and an "onion ring (representing the lamination of the keratin substance of the cyst)" appearance of alternating hypoechogenicity and hyperechogenicity representing layers of compacted keratin and desquamated squamous cells. A "target" or "bull's eye" pattern may be shown, it is indicated the keratinized debris collected centrally in the lesion. In our case, an onion ring pattern was not detected on sonogram. But the "target" or "bull's eye" pattern was found both in the sonogram and gross examination (Fig 1-2).

Li et al. reviewed the English literature between the year of 1999 and 2004, and discovered that 75% of 88 cases received testis-sparing surgery.^[11] According to the review of Loya et al., no patient with epidermoid cyst who has undergone organ-preserving surgery has had subsequent recurrence, with the longest follow-up being 23 years.^[8,9]

In conclusion, epidermoid cysts of the testis are rare, benign lesions with no known metastatic potential. When the preoperative sonographic findings suggest an epidermoid cyst, normal level of serum α -fetoprotein (AFP) and β -human chorionic gonadotropin (β -HCG) and intraoperative frozen sections confirm this, thus, a conservative testicular-sparing surgery is the best choice.

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睪丸表皮樣囊腫：病例報告及文獻回顧

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摘要

睪丸表皮樣囊腫是良性而且少見的睪丸腫瘤，本文報告一位 17 歲男性右邊睪丸有一個腫塊大約有一年時間，理學檢查大約為 2 公分睪丸內不會觸痛的腫塊，超音波檢查發現在睪丸實質下方有一周界明顯高迴音的外壁以及低迴音的中心病兆，有如“標靶”或“牛眼”般特徵，而且病人血中 α 胎兒蛋白以及絨毛膜激素均正常，手術前診斷為右側睪丸表皮樣囊腫，所以做了睪丸保留囊腫摘除術，術後追蹤三年均無復發。本文報告此一少見的睪丸良性腫瘤，討論其超音波診斷及病理特徵的相關性，並複閱相關文獻。

關鍵詞：睪丸表皮樣囊腫、睪丸保留囊腫摘除術

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- 三、第二、三頁為中文及英文之摘要及關鍵詞（請提供 3 至 5 個關鍵詞或簡短片語），中英文摘要

須完全相同，摘要分段撰寫，依序為背景及目的（Background and purpose）、方法（Methods）、結果（Results）及討論（Discussion）。

- 四、請附兩份原稿（一份原稿和一份複印稿，但圖片應使用原圖），包括附表、附圖及照片。圖表應專業製作，一張紙僅一個附圖或附表，依引用順序以阿拉伯數字標出排列。附表須有標題及說明。照片須 5×7 吋光面黑白，背面以鉛筆編號，附圖須有簡單說明（Legend），並另頁撰寫。光學或電子顯微鏡照片，請註明擴大倍率或比例。

註：¹ 根據「生物醫學雜誌投稿之統一規定」第五版，刊載於 *Annals of Internal Medicine* 1997;126(1): 36-47.

肆、參考文獻

未經發表之論文或摘要不得列為參考文獻，但可於本文中說明並註明「未發表」（unpublished observations）。博碩士論文可引用。已被任何雜誌接受刊發但仍未發表之著作，請列出雜誌名稱及年份，並註明「in press」。

原著論文、臨床病理討論、病例報告等論述及特別約稿之綜論（review article）按下列格式撰寫：

- 一、雜誌名稱之簡稱須按照 Index Medicus 型式，作者人數小於 6 位時，詳列所有作者姓名，超過 6 位時，只須列出前 6 位，其它以「等」（et al）代替。

例：Bhasin S, Storer TW, Berman N, Callegari C, Clecenger B, Phillips J, et al. The effects of supraphysiologic doses of testosterone on muscle size and strength in normal men. *N Engl J Med* 1996; 335:1-7.

- 二、本文內引用時，若兩名以下作者請列出姓氏。兩名以上則列出第一名之姓氏，其他以「等」（et al）代替，並以阿拉伯數字方括弧表示於引用之後。

例：One of the first well documented reports of ECH poisoning with fatality in young children was reported by Miller et al. in 1970^[2].

例：Boulet 等人 [3] 報告氣喘患者接受衛教後的知識改變量不受個人因素影響。

三、參考範例

A. 期刊：[作者姓名：題目。雜誌簡稱 年代；卷數（期數）：起迄頁數]

1. 許吟姿、楊光道、張恆鴻：結締組織疾病併發間質性肺病變患者 99mTc-DTPA 肺廓清率之臨床研究。內科學誌 1992;3:79-83.
2. Yang KTA, Chen HD: A semi-automated method for edge detection in the evaluation of left ventricular function using ECG-gated single-photon emission tomography. *Eur J Nucl Med* 1994;21:1206-11.

B. 單行本：[作者姓名：書名，版數（卷數）。發行地；出版公司，年代：引用部份頁數]。

1. 楊志良：生物統計學新論，一版。台北；巨流圖書公司，1984：33-8.
2. Plum F, Posner JB: *Diagnosis of Stupor and Coma*. 3rd ed. Philadelphia: Davis, 1980:132-3.

C. 多重作者之單行本：[有關文章作者姓名：書名，版數（卷數）。發行地；出版公司，年代：引用部份頁數]。

1. 蔣欣欣：護理與健康，編輯：顧乃平：護理專業導論，一版。台北；匯華出版公司，1991：83-121。
2. Levinsky NG: Fluid and electrolytes. In: Thorn GW, Adams RD, Braunwald E, Isselbacher K, Petersdprf RG eds. *Harrison's Principles of Internal Medicine*, 8th ed. New York: Mcgraw-Hill, 1977: 364-75.

伍、著作權

若著作人投稿於本刊經收錄後，同意授權本刊得再授權國家圖書館或其他資料庫業者，進行重製、透過網路提供服務、授權用戶下載、列印、瀏覽等行爲。並得為符合各資料庫之需求，酌作格式之修改。若為摘譯、譯稿或改寫稿，需附原作者之正本同意書，並附原文影本一份；來稿如涉及版權，概由作者自負文責。

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