Some aspects of trophoblastic diseases peculiar to Taiwan

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TAIWAN shares a high incidence of trophoblastic diseases with other areas of Asia. Since the pathogenesis of the trophoblastic diseases is not yet definitely established and thousands of victims are sacrificed to these diseases every year, particularly in this part of the world, the statistical review is still of some importance inasmuch as it would offer some clue to the solution of the pathogenesis and possibly contribute to prevention, if not the elimination, of the fatal outcome.

To this end, some peculiar aspects extracted from our statistical survey of the trophoblastic diseases in Taiwan are presented in this paper.

Materials and follow-up

This series consists of the patients examined at the Provincial Taipei Hospital from 1955 to 1962, where most of the patients come from the middle and lower classes. It is comprised of 148 cases of hydatidiform mole, 22 of chorioadenoma destruens, 22 of choriocarcinoma, and 1 of syncytial endometritis. It should be mentioned that the operative specimens were examined by Professor S. Yeh and collaborators, particularly T. Y. Chen, and checked by Dr. L. Iverson. The criteria of the pathological classification, therefore, must be identical with those in the United States. One hundred ninety-one patients were available for follow-up. Only 2 patients with hydatidiform mole were missing.

Nine among 148 patients with hydatidiform mole had metastases (6.1 per cent).[16] The sites of metastases are summarized in Table I. The mortality rate in 40 molar cases in which hysterectomy was the primary treatment, direct and indirect owing to malignant degeneration, was nil, whereas 108 cases in which curettage was the first treatment, with or without subsequent hysterectomy, showed 5.56 per cent of malignant degeneration and 4.05 per cent of death, which was mostly caused by malignant degeneration. Only one death was caused by metastasis of the mole itself.

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In view of the considerable number of molar cases in elderly multiparas in Taiwan, hysterectomy seems to be the treatment of choice in such cases, particularly where no further children are desired. One of 22 patients with chorioadenoma died from metastasis; therefore, the mortality rate was 4.5 per cent. Since the only fatal case might be better classified as choriocarcinoma (the few villi existing having faded), death from chorioadenoma destruens in this series is practically negligible. It is noteworthy that chorioadenoma destruens showed such an optimistic prognosis in the face of the high incidence of metastases (31.8 per cent). It may be suggested that traumatism during dilatation and curettage could be the cause of the development of chorioadenoma destruens, since all 22 patients with chorioadenoma destruens in our series were referred to us, whereas there was no case of the disease arising from our 108 cases of curetted hydatidiform mole. In view of this, the aspiration method may be the procedure of choice instead of dilatation and curettage. Nineteen of 22 patients with choriocarcinoma had metastases (86.36 per cent) and only 3 patients (13.64 per cent) were free of metastases. Three of 7 patients who survived (31.82 per cent) were those aforementioned without metastases at operation. This stresses the importance of early detection and early treatment of the disease. The 5 year survival rate was 18.18 per cent. In our series the relative rarity of abortion and full-term pregnancy as the preceding condition to choriocarcinoma is conspicuous. The difference in pattern of preceding pregnancy between our series in Taiwan and the literature is shown in Table II.

From Table II it seems that the incidence of abortion or full-term pregnancy as the preceding condition to choriocarcinoma is relatively rare in Asia. Allusion should be made to the particular finding that, in contrast to Hertig's[12] observations, 27.2 per cent of chorioadenoma destruens cases in our series were preceded not by hydatidiform mole but by abortion, as was also pointed out by Acosta-Sison[1] and Wei and Ouyang.[22]

Table I. Sites of metastases

Sites	*Hydatidiform mole*	*Chorioadenoma destruens*	*Choriocarcinoma*
Brain			7
Lung	2	3	12
Vagina and/or urethra	5	3	7
Portio or endocervix		2	1
Pelvic cavity			1
Adnexae	1		
Spinal cord	1		
Inguinal node	1		

Although no classic hydatidiform mole was noted at dilatation and curettage, hydatidiform degeneration or transitional mole might actually have been present. Unfortunately, no pathological examination of the curettings was done because dilatation and curettage was performed by practitioners. Hertig[12] is of the opinion that a true hydatidiform mole is a missed abortion of a blighted ovum which has been retained in utero for about 8 additional weeks. Edmunds[9] stated that hydatidiform mole is a delayed abortion of an abnormal conceptus retained in utero for a length of time sufficient to allow for full development of the swelling of the villi; swelling that could have progressed only to the stage of hydatidiform degeneration or transitional mole, had the pregnancy terminated at an earlier date. If we accept Hertig's and Edmunds' concepts, classic hydatidiform mole might not be a prerequisite for chorioadenoma destruens.

Age and parity

As in other government hospitals on the island, the patients in this study are not representative of the entire population.* On the

*In Taiwan most of the deliveries are still in the hands of midwives and only primiparas, deliveries with complications, or dystocias are apt to concentrate in government hospitals. This is well reflected in the fact that even in Taipei, the most modernized city on the island, the situation[20] of attendance at deliveries during 1959 was as follows: 2.43 per cent by midwives of the Health Service or Center, 80.59 per cent by private midwives, 16.87 per cent by doctors at the hospital, 0.02 per cent by doctors at the mother's home, and 0.09 per cent by unqualified persons.

Table II. Incidence of type of pregnancy preceding choriocarcinoma

Author	No. of cases	Country	Hydatidiform mole (%)	Abortion (%)	Full-term pregnancy (%)	Tubal pregnancy (%)
Eastman[8]		United States	40	40	20	
Novak and Seah[4, 18]	74	United States	39.2	37.8	23	
Hertig[13]		United States (eastern)	50	25	22.5	2.5
Gérin-Lajoie[10]		Canada	40	33.33	25	
Prawirohardjo and associates[19]	27	Indonesia	70.4	14.81	7.4	
Acosta-Sison[2]*	27	Philippines	63.0	18.0	4.0	
Hasegawa[11]	257	Japan	67.9	25.4	6.3	
Wei and Ouyang[22]†	23	China (Taiwan)	50.0	19.2	15.4	7.7
Hsu and associates	22	China (Taiwan)	81.82	9.09	4.5	4.5

*In Acosta-Sison's series, it was *ab initio* in 14.8 per cent.

†In Wei's series[22] there was 7.7 per cent of unknown. In his series published in 1957 the values were: hydatidiform mole, 35.3 per cent; abortion, 23.5 per cent; term pregnancy, 17.6 per cent, and tubal pregnancy, 11.8 per cent (17 cases).

Table III. Age distribution of trophoblastic diseases in Asia, Taiwan, and the United States*

Age	Hydatidiform mole			Chorioadenoma destruens			Choriocarcinoma		
	Asia	Taiwan	United States	Asia	Taiwan	United States	Asia	Taiwan	United States
(16 to 19)†									
15 to 19	5	4	12	2	—	5	5	1	6
20 to 24	23	34	32	18	—	4	26	2	10
25 to 29	22	39	17	21	5	3	28	3	7
30 to 34	25	38	12	12	4	3	30	5	7
35 to 39	16	12	4	12	4	2	20	3	4
40 to 44	7	14	1	10	2	—	9	3	1
45 to 49	5	7	—	7	6	—	14	2	1
50 to 54	2	—	—	—	1	—	6	3	—
Unknown	5	—	4	2	—	—	2	—	—
Total	110	148	82	84	22	17	140	22	36
Average age	32	30	25	32	38	25	33	36	28

*The material of trophoblastic diseases in the United States and Asia was cited from Dr. Iverson's paper.[14]

†In our series no case of hydatidiform mole was found in a patient younger than 16.

Table IV. Age distribution of births* and trophoblastic diseases† in the United States

	Age									
	−15	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 50+	Unknown	Total
No. of births	5,750	479,402	1,254,162	1,092,946	678,745	329,999	83,563	5,101	4,428	3,934,096
Births (%)	0.15	12.19	31.88	27.78	17.25	8.39	2.12	0.13	0.113	100
Hydatidiform mole (%)	15	41	22	15	5	1	–	–	–	100
Chorioadenoma destruens (%)	29	23	18	18	12	–	–	–	–	100
Choriocarcinoma (%)	17	28	19	19	11	3	3	–	–	100

*For age distribution, average of total live births by the age of mother recorded in Demographic Year Book 1949-1958[5] and 1960[6] was used.

†The material of trophoblastic diseases in the United States was cited from Dr. Iverson's paper.[17]

Table V. Age distribution of births* and trophoblastic diseases in Taiwan

	Age									
	< 15	*15 to 19*	*20 to 24*	*25 to 29*	*30 to 34*	*35 to 39*	*40 to 44*	*45 to 49*	*50 to 54*	*Total*
Births (No.)	43	22,355	100,164	109,060	77,423	46,526	19,958	3,725	21†	379,275
Births (%)	0.01	5.89	26.41	28.75	20.41	12.27	5.26	0.98	0.006†	100
Hydatidiform mole (%)	–	2.70	22.97	26.35	25.68	8.11	9.46	4.73	–	100
Chorioadenoma destruens (%)	–	–	–	22.73	18.18	18.18	9.09	27.27	4.55	100
Choriocarcinoma (%)	–	4.55	9.09	13.64	22.73	13.64	13.64	13.64	9.09	100

*For age distribution, average of total live births by the age of mother recorded in Demographic Year Book 1949-1958[5] and 1960[6] was used.

†Age unknown. This group[50-54] in Ch'eng-Chung district was 0.05 per cent (Table VI).

other hand, no reports to the Health Organization of the diseases have been requested by the government. There is, under the circumstances, no means of ascertaining the actual or natural ratio of the diseases to normal pregnancies or deliveries.

From Table III, it is evident that the average age of patients with trophoblastic disease is significantly higher in Taiwan, as in other Asiatic areas, than in the United States. The data were tested for statistical significance. Chi square tests, with the use of the common median in each diagnostic group, were made with the following results: Hydatidiform mole, chi square* 29.68; chorioadenoma destruens, chi square 18.99; choriocarcinoma, chi square 12.65; i.e., all highly significant. Since the birth number is variable with age and parity, the difference in the average age of patients with trophoblastic disease might be assumed to be caused by the difference in the age or parity distribution of births between the two parts of the world, possibly resulting from the difference either in extent of family planning or in racial fertility. This is, however, not borne out by Tables IV, V, and VI, in which the percentage incidences of births and trophoblastic diseases in each age and parity group are compared. These tables demonstrate that gravidas younger than 19 and nulliparas and secundiparas in the United States are predisposed to hydatidiform mole, in sharp contrast with gravidas older than 40 and parous over 4, particularly over 7, in Taiwan. These data would imply that the gravidas of these particular groups in the United States and Taiwan should receive vigilant observation. In Taiwan, the victims of hydatidiform moles might be considerably decreased in number by active expansion of the family planning program which has long been neglected on this island. This would appear to be also substantiated by the statistical data on the fertility of patients with hydatidiform mole. This will be discussed later.

The reason for the difference in age and parity distribution of trophoblastic diseases between the United States and Taiwan is unclear.

*Chi square 16.812 highly significant; chi square 12.592 significant when degree of freedom is 6.

Fertility of the molar patients in Taiwan

Eighty-six of the 108 patients who underwent curettage for hydatidiform mole were available for statistical observation on fertility after treatment. The rest were not followed because of subsequent hysterectomy, application of contraceptive procedures, death, or incomplete information. Needless to say, the 40 cases in which hysterectomy was the first treatment cannot be used for this purpose. Sixty-five of 86 patients had subsequent pregnancies, resulting in 101 full-term deliveries, 22 abortions, and 10 hy-

Table VI. Incidences of births* and trophoblastic diseases according to parity

	Parity					
	0	1	2	3	4	5
Taiwan						
Births						
No.	960	887	705	517	313	165
%	25.90	23.93	19.02	13.95	8.45	4.45
Hydatidiform moles						
No.	26	25	22	16	19	14
%	17.57	16.89	14.86	10.81	12.84	9.46
Chorioadenoma destruens						
No.	4	1	4	3	1	0
%	18.18	4.55	18.18	13.64	4.55	0
Choriocarcinoma						
No.	1	2	3	2	2	2
%	4.55	9.09	13.64	9.09	9.09	9.09
United States†						
Hydatidiform mole						
No.	38	27	24	4	4	5
%	31.67	22.50	20.00	3.33	3.33	4.17

*No records on live births by the parity of mother in the United States are available, whereas such material in Taiwan was derived population of 75,057 (1962), about one thirteenth of that of Taipei City; fortunately, all the birth certificates in this district have been

†The material of trophoblastic disease, only hydatidiform mole, in the United States was cited from Novak and Seah's[18] paper.

$$\hat{S}_{x_1} = \sqrt{\frac{\Sigma(x_1 - \bar{x}_1)^2}{n_1 - 1}} \qquad \hat{S}_{x_2} = \sqrt{\frac{\Sigma(x_2 - \bar{x}_2)^2}{n_2 - 1}}$$

$$\hat{s} = \sqrt{\frac{\Sigma(x_1 - \bar{x}_1)^2 + \Sigma(x_2 - \bar{x}_2)^2}{n_1 + n_2 - 2}}$$

$$\text{S.E. } \bar{x}_1 = \frac{\hat{s}}{\sqrt{n_1}} \qquad \text{S.E. } \bar{x}_2 = \frac{\hat{s}}{\sqrt{n_2}}$$

$$\text{S.E. difference} = \sqrt{(\text{S.E. } \bar{x}_1)^2 + (\text{S.E. } \bar{x}_2)^2}$$

$$\frac{\text{Difference}}{\text{S.E. difference}} = t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{\hat{s}^2}{n_1} + \frac{\hat{s}^2}{n_2}}}$$

datidiform moles. Secondary sterility was, therefore, found in 24.4 per cent after dilatation and curettage for the moles. In an attempt to determine in greater detail the fertility of molar patients some statistical studies were made. The statistical formulas[3] used are given above.

Deliveries before and after molar pregnancies. One hundred and thirty-nine of 148 patients with hydatidiform mole were available for premolar study, and the remainder were eliminated from this series because of incomplete information. As mentioned above, 86 of 108 patients with hydatidiform mole who underwent dilatation and curettage as the primary treatment were acceptable for postmolar study. Prior to molar pregnancy the patients had 0.33 pregnancy a year and after molar pregnancy 0.21 pregnancy a year. This means the interval between pregnancies before molar pregnancy was 3.06 years and that after molar pregnancy 4.70 years. S.E. difference was 0.028 and t was 4.01, greater than 1.96. This

Parity								
6	7	8	9	10	11	12	Unknown	Total
90	34	20	6	5	3	1	0	3,706
2.43	0.92	0.54	0.16	0.14	0.08	0.03	0	100
8	8	3	3	2	1	1	0	148
5.40	5.40	2.03	2.03	1.35	0.68	0.68	0	100
1	2	3	1	1	0	1	0	22
4.55	9.09	13.64	4.55	4.55	0	4.55	0	100
1	1	2	1	3	1	1	0	22
4.55	4.55	9.09	4.55	13.64	4.55	4.55	0	100
3	3	1	1	0	0	0	10	120
2.50	2.50	0.83	0.83	0	0	0	8.33	100

from the births in the Ch'eng-Chung district from January, 1961, to June, 1963. This district, located near our hospital, has a submitted to the Taipei Public Health Teaching and Demonstration Center since 1961.

indicates that a significant decrease in fertility occurs after curettage for hydatidiform moles. Since the incidence of an artificial abortion before and after molar pregnancies was 0.012 and 0.019 per year, respectively, t was 0.769, evidently less than 1.96, which means there was no significant difference in the incidence of artificial abortion before and after molar pregnancies. Artificial abortion, therefore, should be excluded as a possible factor in the decreased fertility, which might be caused by the changes in the uterus or the ovaries from the disease, per se, or curettage for the disease.

Abortions before and after hydatidiform moles. The number of abortions per year before hydatidiform mole x_1 was 0.051 (No. 139) and that after hydatidiform mole x_2 0.054 (No. 86), $\hat{S}x_1$: 0.140, $\hat{S}x_2$: 0.203, S.E. $\bar{x}_1$: 0.012, S.E. $\bar{x}_2$: 0.022, S.E. difference: 0.025, $\frac{x_1 - x_2}{\text{SE difference}}$ 0.1, less than 1.96. There was, therefore, no significant difference in the incidence of abortion before and after hydatidiform mole.

Deliveries in molar and nonmolar patients. The number of deliveries per year in molar patients x_1 was 0.318 (No. 146), whereas that in nonmolar patients x_2 was 0.251 (No. 250), $\hat{S}x_1$: 0.190, $\hat{S}x_2$: 0.208, S.E. $\bar{x}_1$: 0.016, S.E. $\bar{x}_2$: 0.013, S.E. difference: 0.018, t: 3.76, greater than 1.96. In other words, the birth interval in molar patients was 3.14 years and that in nonmolar patients 3.98 years, which indicates the predisposition of molar patients to multiparity and probably vice versa, as mentioned above.

Abortions in molar and nonmolar patients. Since Hertig[12] and Edmunds[9] state hydatidiform mole is a delayed abortion of an abnormal conceptus, frequent abortion would increase the chances of the contraction of hydatidiform mole. If we assume an abortion or stillbirth and hydatidiform mole would have a common pathogenetic denominator, there might be some parallelism between the two conditions. The number of abortions per year in molar patients x_1 was 0.040 (once in 25 years) and that in nonmolar patients x_2 0.038 (once in 26.5 years): $\hat{S}x_1$:

Table VII. Socioeconomic condition in trophoblastic diseases

Socioeconomic condition	*Hyaatidiform mole*	*Chorioadenoma destruens*	*Choriocarcinoma*
Over-all average	5	1	
Average	34	5	2
Lower average	64	11	11
Poor	45	5	9
Total	148	22	22

0.231, $\hat{S}x_2$: 0.180, S.E. $\bar{x}_1$: 0.019, S.E. $\bar{x}_2$: 0.011, S.E. difference: 0.022, t: 0.1, less than 1.96. Contrary to our expectations, as Iverson[17] also pointed out, there was no significant difference in the incidence of abortions between molar and nonmolar patients.

Socioeconomic conditions and eating habits

Acosta-Sison[2] states that the high incidence of hydatidiform mole in the Philippines occurs only among the poor and not among the well-to-do patients. She pointed out at the World Congress of International Federation of Gynecology and Obstetrics held in Montreal in 1958 that molar patients greatly increased even among well-to-do private patients during the Japanese occupation when meat was scarce and very expensive, but decreased after World War II when the meat supply was adequate and inexpensive. Douglas[7] could not find such a remarkable frequency of chorionic diseases as in the Far East, even in Bellevue Hospital, New York, where the hospital population was drawn from the lowest level in the city. Iverson[17] has expressed the belief that socioeconomic factors may be significant in relation to the occurrence of trophoblastic tumors, realizing that the socioeconomic status of the patients in the United States sample is probably much higher than in the Asian group. As Table VII shows a great majority of our hydatidiform mole cases came from the middle and lower classes and only a few from the well-to-do class. In our series, 29 of the cases preferred meat, 39 vegetables, and 80 showed no special preference. Even among the meat-eaters, because of the poor socioeconomic status, protein intake would be inadequate and much less among the vegetable-lovers. Since this disease is more common in rice-eating Asians than in Westerners, it will be interesting to note our previous data,[21] in which the placenta of mice fed on low protein diet, *Penicillium islandicum* sop (toxic agent of yellow rice) and L-ethionine showed marked vacuolization of syncytiotrophoblast and appearance of giant cells with congestion. Acosta-Sison's and our data indicate that in order to reduce the number of molar cases governmental action should be taken to improve the nutritional status of the poor socioeconomic group.

Difficulties in diagnosis of trophoblastic diseases

Based on Hertig's[12] observations, chorioadenoma destruens is associated with hydatidiform mole or occurs 4 to 12 weeks following passage of the mole. Therefore, the age distribution or average age of hydatidiform mole and chorioadenoma destruens is expected to be approximately the same, and that of choriocarcinoma might be somewhat older should a certain period of time be required for malignant degeneration. The average age of each diagnostic group in the United States and other parts of Asia seems to substantiate this assumption but those in our series in Taiwan do not, i.e., the average age of patients with hydatidiform mole, 30, versus that of patients with chorioadenoma destruens, 38, chi square 27.71, greater than 18.475, indicates a highly significant difference as well as the average age of patients with hydatidiform mole, 30, versus that of patients with choriocarcinoma, 36, chi square 25.07, greater than 18.475. That such difference is caused by the difference in age distribution of each diagnostic group is well demonstrated by Table V; however, another interpretation is offered by the long intervals between the preceding pregnancy and chorioadenoma destruens or choriocarcinoma, which are summarized in Table

Table VIII. Intervals between preceding pregnancy and trophoblastic tumors

	Year														
	-1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*Unknown*	*Total*
Chorioadenoma destruens	13	2	1	1	1	1	2								1	22
Choriocarcinoma	9	6	1	2	1	2								1		22

VIII. With such intervals and particularly in the absence of definite past history of hydatidiform mole, the present vaginal bleeding can hardly be associated with trophoblastic tumors. In this connection, therefore, gynecologists in Taiwan should exercise extreme caution because of the possibility of trophoblastic tumors whenever abnormal vaginal bleeding is noted, regardless of absence or presence of preceding moles, and a gonadotrophin determination should be done as a routine. We have had 2 cases of cervical choriocarcinoma simulating uterine cervical carcinoma which necessitated emergency operation and 1 case of choriocarcinoma in a 54-year-old woman simulating endometrial carcinoma, and the diagnoses were corrected by frog test and histologic examination after a Wertheim operation. Too much emphasis cannot be placed upon the necessity of pathological examination of operative specimens or curettings, even when a normal appearance of the placenta is evident to the naked eye.

The average age of patients with chorioadenoma destruens is 38 versus that of patients with choriocarcinoma that is 36, chi square 6.95, less than 14.067, which indicates no significant difference. This would suggest that the two clinical entities might in most instances be independent and choriocarcinoma is not necessarily preceded by chorioadenoma destruens.

Our experience suggested that long neglect of hydatidiform mole due to misdiagnosis would increase chances of metastases, chorioadenoma, local malignancy caused by hemorrhage and sepsis, and choriocarcinoma. Therefore, early diagnosis and treatment are always important for avoidance of such drastic outcomes. In our series only 50.68 per cent of cases showed a larger uterus than that expected from the supposed gestational age and approximately 50 per cent showed gonadotropin titer higher than 100,000 frog units* and the remainder did not show typical findings. Difficulties in diagnosis arise particularly in cases of dying or dead moles with low titer of gonadotropin and the uterus of average or below average size. It is not easy to distinguish this condition from abortion. In this connection in every abortion case where the frog test is persistently positive, in spite of the probable death of the embryo the possibility of hydatidiform mole should be taken into consideration. The differential diagnosis between twin and hydatidiform mole is really a puzling one. Based on our data,[15] urinary gonadotropin and estrogen were variable, while pregnanediol was constantly low in all but a few cases. Too much emphasis cannot be placed on hormonal discrepancy, i.e., low pregnanediol despite average or high titer of gonadotropin very often suggests the possibility of hydatidiform mole and leads to a correct diagnosis. Similarly, acidophilic vaginal smear or low level (follicular) phase of basal body temperature in spite of high or average gonadotropin titer gives a clue to correct diagnosis. We have had 2 cases of twin pregnancies saved from being mistaken for hydatidiform mole and curetted on the basis of the persistent high level (luteal)

*In Taiwan, with the use of *Rana tigerina*,[14] 6.25 – 10 international units correspond to 1.0 frog unit with Antuitrin -S, and with rabbits 3.0 international units to 1.0 rabbit unit. However, with pregnancy urine 1 rabbit unit corresponds to 3 to 4 frog units. Based upon our clinical experience, we consider 100,000 frog units in winter, 200,000 frog units in summer a most probable, and 200,000 frog units in winter and 400,000 frog units in summer, a definite indication of hydatidiform mole.

phase of basal body temperature curve. Roentgenological confirmation of the absence of fetus, free sounding of the uterine cavity, and rapid enlargement of the uterus in a short period of time often offer invaluable aids toward establishing a correct diagnosis. Hysterography, with the use of an iodinated contrast medium, was very often misleading inasmuch as the alveolar picture could be observed sometimes in normal pregnancies, whereas such finding was not demonstrated in typical hydatidiform moles.

Summary

The difference of age and parity distribution in patients with trophoblastic disease between the United States and Taiwan is demonstrated. Based on the results some advice on prenatal supervision is offered. Fertility of molar patients, particularly after dilatation and curettage for the disease is presented. Socioeconomic status and eating habits of molar patients in Taiwan carry some preventive medical implications. Some statistical data on clinical findings peculiar to Taiwan which would have a bearing on prevention, diagnosis, and/or treatment of trophoblastic diseases are discussed.

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