THE INCIDENCE AND CLINICAL PATTERN OF DEEP VEIN THROMBOSIS IN THE CHINESE IN HONG KONG

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INRODUCTION

Deep vein thrombosis (DVT) is a common disease seen in western hospitals.[1] There is a great difficulty in surveying the true incidence of venous thromboembolism in a community. Most data on incidence are related to clinically recognisable cases. It is generally believed that there is a marked ethnical and geographical difference in the incidence of venous thromboembolism. Hume in 1966 estimated an incidence of about 182,000 cases per year in England,[1] extrapolating from the International Classification of Disease (ICD) coded DVT diagnosis using a segment of the hospital population. Coon in a different approach, using a longitudinal study in a community, estimated about 250,000 cases per year in U.S.A.[2] However literature from the Asian-African regions are scarce and generally reported a lower incidence of post-operative thrombembolic disease.[3,4] Clinical observations indicated that venous thromboembolism is rare among the Chinese in Beijing with proximal fractures of femur, and even among some high risk orthopaedic patients in Hong Kong Chinese.[5,6] Subsequent prospective studies in high risk patients in Hong Kong confirmed that, although deep vein thrombosis does occur in Chinese in Hong Kong, its occurrence and the complication of pulmonary embolism were much lower compared with western data.[7-10]

The Chinese community in Hong Kong have been modifying their life style during the process of industrialization and modernization. With more aging of our population, many previously "western diseases" including hypertension and coronary artery disease are becoming more common, and pulmonary thromboembolism has been identified and reported.[11-14] The present study reviews the incidence and pattern of deep vein thrombosis among the Chinese in Hong Kong.

MATERIALS AND METHODS

The incidence of DVT was studied by a multifaceted approach. The overall pattern in Hong Kong where 95% of the population is Chinese, was assessed by reviewing the annual departmental reports of the Medical and Health Services Department in Hong Kong between the years 1975 to 1985. All venous thrombosis and embolism classified under the ICD coding 450-453 were included.

The incidence of DVT was studied in detail by a field survey in the Prince of Wales Hospital (PWH) in Hong Kong. This involved a retrospective review of the hospital admission record, discharge summaries and phlebography reports in the PWH during the period between October 1984 to March 1987. DVT was diagnosed when there was acute onset of leg swelling with or without pain for less than four weeks, associated with the presence of obstruction and/or phlebographic intralumnial defects in the deep vein system.[1]

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RESULTS

Incidence of DVT

The incidence of venous thrombosis or embolism in Hong Kong increased from 173 cases per year in 1975 to 430 cases per year in 1985 (Table 1). Of the 98,200 admissions within the 30 months from October 1984 to March 1987 in PWH, which serves a population of around 700,000 people, 27 Chinese patients with DVT were identified, giving an incidence of 2.7 cases per 10,000 admissions, or 15.4 cases per million population per year.

Clinical Pattern of DVT in the Chinese

Of the 27 patients with DVT, 16 were females and 11 were males. Their ages ranged from 25 to 75 years, with a mean age of 53.1 ± 11.6 years with a higher distribution in the older age groups (Figure 1). Their clinical presentation included massive leg swelling (100%), 76% of which extended above the knees, leg pain (66.6%), dilated superficial veins, calf or thigh tenderness (48.1%) and increased local temperature (44.4%). However Homan's sign was only positive in 7.4% of the patients (Table 2).

Fig. 1 **AGE DISTRIBUTION OF 27 PATIENTS WITH DVT**

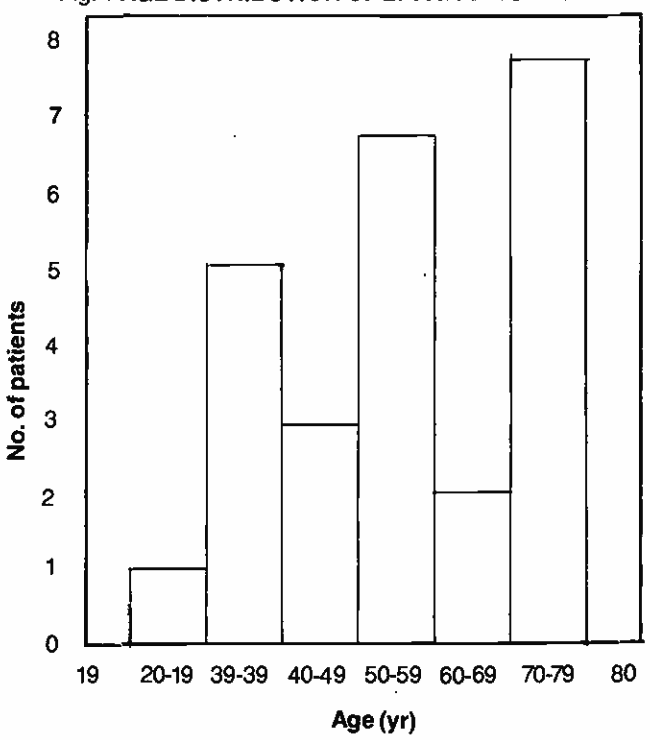

Table 1
INCIDENCE OF PHLEBITIS, VENOUS THROMBOSIS OR EMBOLISM IN HONG KONG (ICD 450-453)

YEAR	TOTAL DISEASE TREATED		DEATH
	GH + GAH	All hosp.	
1975	173	—	7
1976	112	—	6
1977	107	155	7
1978	210	254	6
1979*	188	276	3
1980	192	257	5
1982	229	285	2
1983	233	363	6
1984	242	359	1
1985	306	430	6

*1979-85 ICD 451-453
GH + GAH: Government and Government Assisted Hospital

Table 2.
CLINICAL FEATURES OF PATIENTS WITH DVT

TOTAL: 27 PATIENTS	NO.	%
Leg swelling	27	100
Right	12	44.4
Left	14	51.8
Bilateral	1	4.7
Above knee	20	74
Below knee	7	25.9
Pain	18	66.6
Dilated superficial veins	13	48.1
Calf/thigh tenderness	13	48.1
Increased in skin temp.	12	44.4
Homan's sign	2	7.4

Table 3.
POSSIBLE RISK FACTORS ASSOCIATED WITH DVT IN CHINESE

TOTAL: 27 PATIENTS	NO.	%
Immobilization	14	51.8
Post operative	9	33.3
Medical illness	5	18.5
Smoking	7	25.9
None identified	8	29.6
Malignancy	4	14.8
Varicose vein	4	14.8
Trauma to ipsilateral leg	2	7.4
Nephrotic syndrome	1	3.7
Diabetes Mellitus	1	3.7

Risk Factors for DVT
Associating risk factors were identified in 70.4%, including immobilisation related to either surgical or medical causes (51.8%), cigarette smoking (25.9%), malignancies (14.8%), varicose veins (14.8%), local trauma (7.4%) and nephrotic syndrome (3.7%) (Tables 3 & 4). Associated malignancies included one adenocarcinoma of lung and stomach, one acute myeloid leukaemia and one myeloma respectively.

Complications of DVT
Out of the 27 DVT patients, five patients (18.5%) had pulmonary thromboembolism diagnosed by isotopic pulmonary perfusion scan or pulmonary arteriograms. Of these three patients had DVT extending proximal to the knees and two patients died of massive pulmonary embolism. The overall mortality was 7.4%. Post thrombotic venous insufficiency, as evidenced by persistence or recurrence of leg swelling, venous claudication, skin pigmentations and new varicose veins were found in 10 patients (34.7%).

DISCUSSIONS

This study confirmed a low incidence of DVT in Chinese. The estimated incidence is less than one tenth of the western data (Table 5), allowing for the fact that both figures could be an underestimate from failure to recognise subclinical cases and the omission of venograms to confirm the diagnoses.

The pattern of increasing incidence with advanced ages conformed well with the World Health Organization data encompassing Japan, Australia, Israel and Germany.[16] Probably these could be attributed to the higher incidence of heart disease and malignancies in older age groups.[17] The clinical signs of DVT are notoriously unreliable. Pain, and other local features of inflammation did not present with a high enough frequency to be discriminative for the condition. We believe, with others, that Homan's sign is only infrequently found and that it is also unreliable. The presence of acute swelling, especially if unilateral, should prompt us to perform more reliable screening tests, including phlebography, which is still the best for DVT diagnosis.

It has been the usual belief that DVT rarely occur in Chinese patients. Its occurence should therefore alert us to exclude secondary causes, notably underlying malignancies. However the present study has revealed that the overall risk factors for DVT are similar to the western pattern. Immobilization remains the most common predisposing factor. Within a mean follow up period of six months, associated malignancies have not appeared to be particularly frequent. In all our cases, clinically obvious malignant diseases were present and documented before the onset of DVT. On this issue, it is perhaps advisable to recommend simple preventive measures to all immobilized patients. This however has not been adopted in the past in view of the general impression of low DVT incidence among the Chinese. Prophylactic anticoagulation should also be considered in patients at high risk.

Table 4.
POSTOPERATIVE CAUSES FOR IMMOBILIZATION

Surgical	
Gastrectomy	1
Appendicectomy	1
Fracture neck of femur	1
Osteotomy of knee	1
Fracture of ankle	1
Post caesarean section	2
Post hysterectomy	1
Post partum sterilization	1
Medical	
Stroke	1
Chronic renal failure	1
Congestive heart failure	1
Pemphigus	1
Rheumatoid arthritis	1

Table 5.
INCIDENCE OF DEEP VEIN THROMBOSIS

AUTHORS (YR)	INCIDENCE	REMARKS
Mok (1970)[7]	15%	Venogram Fractured Femur
Tso (1980)[9]	17%	I^{125} Fibrinogen Stroke patients
Warlow (1976)[18]	53%	I^{125} Fibrinogen Scottish stroke
Hume (1976)[1]	36.5 cases per 10,000 admissions	Hospitalised population
Coon (1977)[2]	1100 cases per million population per year	USA
Woo (1987) (present series)	2.7 cases per 10,000 at admissions 15.4 cases per million population per year	Hong Kong Chinese

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