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### Traumatic Bone Fracture in CVA Patients

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## 腦中風病人之外傷性骨折

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本研究是收集自71年9月至77年9月間，因腦中風後跌倒發生骨折的住院病患共45位作分析。病人以女性為最多共29位，其中以老年人65歲到90歲最多佔68.8%。骨折發生於腦中風後2個月到20年不等，骨折以hemiplegia患者佔大多數，且以患側為主(77.8%)，以不曾接受過復健治療的病人佔大多數，共35位。骨折部份以股骨最多，共43位，其中粗隆間骨折最多，佔44.5%。病人在骨折前，以利用輔具助行的病人最多，佔51.3%。

*Key words: bone fracture, CVA, rehabilitation, hemiplegia.*

## 前言

隨著台灣社會結構的改變，國民的平均年齡升高，老年人口比例增加，而腦中風的發生率也因而增加，高居十大死亡原因的前一、二位。據民國74年台灣全國26所一、二、三級教學醫院所做的統計，全年腦中風約有7355例。發生年齡以50歲至74歲病人最多，佔71.5%。半身偏癱者、腦梗塞病患佔73.5%；腦出血則佔64.2%[1]。日後能有步行能力者約有80%[2]。但步行患者日後若不慎跌倒導致骨折，則不僅耗費金錢，且會造成更大的痛苦。本篇主要是要探討腦中風病人骨折的各種情況，以冀進一步找出預防之道。

## 材料與方法

本研究收集自71年9月到77年9月間腦中風病人因跌倒引起骨折而住院者共45位，以病歷調查、門診或電話追蹤來探討病人骨折的各種狀況，以及其與復健之關係。為避免高齡患者因骨折疏鬆，原來即有脊椎壓迫性骨折，故脊椎骨折的病例不包括在本研究內。

## 結果

病人以女性最多共29位(64.4%)；男性為16位(35.6%)，年齡由49歲到90歲，其中以老年人65歲到90歲為最多佔68.8%(表1)。

表 1 Age and Sex Distribution of the CVA Patient with Fracture

Age\Sex	Male	Female	Total
<50	0(0%)	1(2.2%)	1(2.2%)
51-64	3(6.6%)	10(22.2%)	13(28.9%)
65-90	13(28.9%)	18(40%)	31(68.8%)
Total	16(35.6%)	29(64.4%)	45(100%)

骨折以股骨為最多，共43例(95.6%)，其次為蹠骨及顱骨骨折僅各佔1例，至於為左、右側偏癱並無顯著關係(表二)。但以完全性偏癱佔多數，且以患側為主(77.8%)(表3)。

表 2 The Fracture Sites and Weakness Sides of the CVA Patients

Fracture Site\Weakness side	Left	Right	Total
Femoral bone	20	23	43(95.6%)
Metatarsal	1	0	1(2.2%)
Zygomatic	0	1	1(2.2%)
Total	21(46.7%)	24(53.3%)	45(100%)

表 3 The Relationship between Fracture Sites and Unfunctional Sides of the CVA Patients

Fracture Site\Unfunctional	Hemiplegic side	Sound side	Total
Intertrochanteric	18	2	20(44.5%)
Femoral neck	14	5	19(42.2%)
Supracondylar	1	1	2(4.5%)
Femoral Shaft	0	1	1(2.2%)
Subtrochanteric	0	1	1(2.2%)
Metatarsal	1	0	1(2.2%)
Zygomatic	1	0	1(2.2%)
Total	35(77.8%)	10(22.2%)	45(100%)

骨折發生於腦中風後2個月到20年不等，其中前二年發生率最多(46.6%)(表四)。股骨骨折中，以粗隆間骨折最多佔(44.5%)，其次為頸部骨折(42.2%)，男女性別以女性為主(表五)。

表 4 The Relationship Between Duration of CVA Attack and Sites of Fracture

Duration of CVA\Fracture Sites	Femoral	Metatarsal	Zygomatic	Total
1-2Y	20	1	0	31(46.6%)
3-4Y	8	0	1	9(20%)
5-6Y	4	0	0	4(8.9%)
7-10Y	8	0	0	8(17.8%)
11-20Y	3	0	0	3(6.7%)
Total	43(95.6%)	1(2.2%)	1(2.2%)	45(100%)

表 5 The Relationship between Sex and Fracture Sites of the CVA Patients with Femoral Fracture

Femoral bone\Sex	Male	Female	Total
Intertrochanteric	8	12	20(46.5%)
Femoral neck	9	10	19(42.2%)
Supracondylar	0	2	2(4.7%)
Femoral Shaft	0	1	1(2.3%)
Subtrochanteric	1	0	1(2.3%)
Total			43(100%)

本研究的骨折病人在腦中風後大部份都沒有接受過復健治療(77.8%)(表6)。而病人在骨折前之神經障礙功能若以Brunnstrom stage分類，則以第三、四期佔最多，分別為38.5%以及28.2%(表7)。

表 6 The Relationship between Sites of Fracture and Rehabilitation Condition after Stroke

Fracture Sites\Rehab	Yes	No	Total
Intertrochanteric	5	15	20(44.4%)
Femoral neck	4	15	19(42.2%)
Supracondylar	0	2	2(4.5%)
Femoral Shaft	0	1	1(2.2%)
Subtrochanteric	0	1	1(2.2%)
Metatarsal	1	0	1(2.2%)
Zygomatic	0	1	1(2.2%)
Total	10(22.2%)	35(77.8%)	45(100%)

表 7 The Relationship between Motor Ability According to the Brunnstrom Stage and Sites of Fracture

Motor stage\Bone fracture	Femoral neck	Intertrochanteric	Total
1	1	0	1(2.6%)
2	3	3	6(15.4%)
3	8	7	15(38.5%)
4	4	7	11(28.2%)
5	3	3	6(15.4%)
Total	19(48.7%)	20(51.2%)	39(100%)

雖然大部份患者沒有接受過復健治療，但半數患者均配用輔具助行(51.3%)(表八)。

表 8 The Relationship Between Ambulatory Device and Sites of Fracture

Device\Bone Fracture	Femoralneck	Intertrochanter	Total
Ambulatory without device	6	6	12(30.8%)
Ambulatory with device	9	11	20(51.3%)
Wheelchair bounded	2	2	4(10.3%)
Bed ridden	2	1	3(7.7%)
Total	19(48.7%)	20(51.2%)	39(100%)

股骨骨折之患者有43位，其中34位接受手術治療，在手術後接受復健者為18位。病人因骨折住院平均日數為24日，而股骨粗隆間骨折需接受手術治療患者在開刀後接受復健治療者平均住院日較長為48.4 ± 29.1日，沒有接受復健治療組則僅19.5 ± 6.36日。而股骨頸骨折者相反，手術後接受復健治療者共為18.7 ± 9.37日，沒有接受復健治療者則反而較長23.1 ± 23.6日。

## 討論

病人在腦中風後，因跌倒引起骨折，其中以女性老年病人佔多數，且以股骨最多，曾有研究指出女性老年病人在75歲以上，比男性病人更容易因跌倒而造成近側股骨、遠側前臂、近側肋骨或脊椎骨骨折[3,4]，其中尤以近側股骨為主[4]。可能是女性骨質疏鬆的發生年齡較早，程度上也較男性更顯著之故。據統計女性的bone mass比同年齡的男性為少，在18歲時約少20%[5]。在骨骼成熟時，約80%為cortical骨，只有20%為trabecular骨。骨質疏鬆以女性較早開始[6]，且骨質減少比男性快[7]，但超過80歲時則反而男性較快[6]。一般bone mass減少由30歲到40歲開始[7]，在65歲以前以trabecular骨流失為主。65歲之後，則改由cortical骨減少為主。在女性停經後的前15年中，每年有1%至2%的bone mass減少，以後則以每年0.18%速度繼續下降。男性則可持續以每年0.12%地降低。故女性到65歲時，有半數的人骨頭已處fracture threshold之下，到85歲則更高達100%[5]，故較容易因跌倒引起骨折。加以在臨床上一些並非由太大的外力傷害引起骨折的患者，發生骨折的地方。其bone density有減少現象[4]，所以骨質疏鬆是一重要因素。

對女性而言，在65歲以前其trabecular骨因骨質疏鬆，跌倒後引起骨折之發生率與男性比為6：1主要地方在遠側前臂及脊椎骨折[5]。本篇沒有把脊椎骨折包括在分析範圍內，乃因無法辨別此脊椎骨折是否在腦中風前便存在，以及這種脊椎壓迫性骨折係由於骨質疏鬆引起，或因少許外力而造成，因此無法探討是否腦中風更容易發生脊椎骨折。

因骨質疏鬆所造成的骨折，以近側股骨，尤其股骨粗隆間較多，其次為肋骨近端[5]。Eladdien的統計，在過去的1965～1980年間，股骨粗隆間骨折比以前增加4倍，而股骨頸骨折則增加3倍[8]。這與本篇病人以粗隆間骨折為多相同。

Frankel及Burstein研究發現，在跌倒時局部的力量作用於髖關節很大，足以折斷正

常的近側股骨，但由於正常人上半身會立刻反應，伸出手來做outstretched hand guarding的動作，以減輕加諸於髖關節的力，而老年人因老化的關係，反應較緩慢，無法在瞬間快速做出保護動作，故容易引起近側骨骨折[9]，本篇的病人大部份是單側偏癱或無力，無法做出此動作故極易在跌倒時導致近側股骨骨折。

至於左、右側無力患者其發生骨折機率並沒有顯著差異，可能是因為本篇病患骨折大部份為下肢，下肢左右兩側骨質的density大致相近。但對上肢而言，則左側比右側的density較低，故有人報告左側上肢骨折比右側多[4]。

病人骨折以偏癱患側為多(77.8%)。其原因可能是患側活動載重較少，骨質疏鬆更明顯，此外，肌張力的不正常、翻正反射、平衡、感覺的不佳，會導致病人把大部份的weight bearing放於其健側[10]，故會更加速偏癱側的骨質疏鬆，加以步態不穩，跌倒時又往往倒向偏癱側，故患側骨折機會更高[11]。

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## Traumatic Bone Fracture in CVA Patients

Yin-Chung LAU, and May-Kuen WONG

CVA patients with traumatic bone fracture admitted to Chang Gung Memorial Hospital from September 1982 to September 1988 were analysed.

There were 45 patients. Among them, 29 cases were female (64.4%),16 cases were male (35.6%). The age ranged from 49 to 90 year old. The age distributions of them were old in majority, 31 cases were over 65 year old (68.8%). Fracture happened after stroke for 2 months to 20 years.

There were no significant difference at side of lesion. Most of them were hemiplegic patients. The fractures usually occurred on the weakness side (77.8%),with femoral fracture in majority (95.6%), especially common at intertrochanteric or femoral neck area.

Thirty-two cases were ambulatory with (51.3%) or without device (30.8%). Fracture

usually developed by fallen down to the ground accidently during walking because most of them never received any rehabilitation program after stroke, but applied the walking aids by themselves.

Most of them should receive rehabilitation for ambulation training after fracture management.

Therefore,it is very important for every CVA patient who has motor weakness to receive proper rehabilitation program and select adequate walking aid by well trained personnels. Otherwise, they are high risk for bone fracture, should pay more medical expenses whenever fracture developed.