FALLS, FRACTURES & TRAUMA

AGE AND SEX DISTRIBUTION OF FEMORAL NECK FRACTURES (FNF) AND COLLE’S FRACTURES (CF) IN AN ASIAN COUNTRY

S. LEKAMWASAM
Faculty of Medicine, Galle, Sri Lanka

Introduction
Fragile fractures cause considerable mortality and morbidity in elderly. The age and sex distribution of these fractures demonstrates a wide geographical variation and reasons for this is unclear.

Methodology
Case notes of 2860 patients admitted with fracture/s to the Accident Department of National Hospital of Sri Lanka for a period of 6 months were searched retrospectively to collect data. Patients with FNF and CF were considered for this analysis.

Results
Number of FNF and CF were 316 (11% of total patients) and 472 (17%) respectively. The male:female ratio of entire group of FNF was 1.1:1 while that of CF was 2.1:1. The number of admissions with FNF showed sharp increase after 40 years with a peak between 71-80 years for both men and women. 12% of FNF were below 40 years and 42% were above 70 years. The number of admissions with CF was steady with two small peaks between 15-20 and 31-40 years and seen in both men and women. 72% of CF were below 50 years and half of them were below 30 years.

The median (+IQR) of FNF and CF were 68 (50.5-76) and 38 (23-53) years respectively. The male:female ratio of FNF below 50 years was 2.2:1 while that above 50 years was 0.8:1. The male:female ratio of CF below 50 years was 3.3:1 while that above 50 years was 0.8:1.

Conclusion
FNF admissions showed age-related exponential increase typically described in other studies although the increase appeared to begin at early age. The sex distribution of FNF and CF appeared different from European or USA data and are more compatible with pattern seen in Asian countries.

COMPLIANCE WITH AN OUTPATIENT-BASED FALLS PROGRAM

R. SHERIDAN, P. NUTALL, R. COWELL AND M. MacMAHON
Medicine for the Elderly, Bristol Royal Infirmary, Bristol

Introduction
Falls prevention programs in the community are effective but data regarding their implementation in secondary care is scarce. These interventions are costly and compliance is necessary if a hospital-based service is to be effective. In order to assess compliance we examined the attendance rate in the first eighteen months of our newly set-up outpatient multidisciplinary falls program.

Methods
The first 118 patients referred by one medical team with a special interest in falls was prospectively studied. The program consisted of sessions based at the outpatient clinic and home exercises were also prescribed. All non-attenders were encouraged to attend by telephone, mail and hospital transport contact.

Results
Of the 118 patients, mean age 79 (range 66-98 yrs), 99 were female. 82% attended at least one session and 70% attended all. Contact efforts improved attendance by only 1%. Subanalysis showed that the attendance rates were 91% amongst referrals from the general medical clinic, 78% from the falls clinic and 63% from the medical ward respectively. 55% of the non-attenders were >80yrs and 36% lived alone. In addition, compliance with home exercises was assessed in 57 patients of which only 46% were still exercising at 6 months.

Conclusion
Almost one fifth considered suitable for an outpatient falls program did not attend including a significant proportion of those referred from a special falls clinic. These data suggest firstly that our current efforts to improve attendance are unhelpful and secondly, that the community should support a hospital-based falls service in order to implement proven interventions in patients that do not comply.
PHYSICAL OUTCOMES AFTER A BALANCE-RETRAINING PROGRAM IN FALLERS

R. SHERIDAN, R. COWELL, R. BAILEY AND M. MacMAHON
Medicine for the Elderly, Bristol Royal Infirmary, UK

Introduction
Falls are a major cause of morbidity and mortality. Previously proven interventions incorporated exercise programs but these included mainly nonfallers, were usually home-based and often of long duration. Data regarding shorter exercise programs in fallers attending secondary care is scarce.

Methods
We examined the effect of an exercise program on balance and gait in referrals from a falls clinic. Sessions occurred twice weekly for four weeks and home exercises were also prescribed. The Berg balance scale and Tinetti assessments of balance and gait (TBG) were measured before exercise (week 0), at program completion (week 4), and then 12 weeks after completion (week 16).

Results
76 patients (63 female), mean age 81 yrs (range 68-96) were studied. 61 completed the 4 week program and 47 attended on week 16 check-up. Mean TBG scores were 19.5(5.4), 22.1(5.5), 21.2(5.2) at weeks 0,4 and 16 respectively, P=0.002 (Wilcoxon signed rank test comparing weeks 0-16). Mean Berg scores were 41.1(10.4), 45.9(10), 43.8(10) at weeks 0,4 and 16 respectively, P=0.01.

Conclusions
There was a significant improvement in balance and gait measurements in fallers after a brief period of group therapy and this was sustained twelve weeks later. The short course is more realistic and feasible to implement in secondary care where resources are limited. Outcomes in terms of falls and related injuries need to be assessed after therapy in this hospital-selct population.

IATROGENIC CAUSES OF FALLS IN HOSPITALISED ELDERLY PATIENTS

C. FRELS, P. WILLIAMS, S. NARAYANAN AND S. GARIBALLA
Sheffield Institute For Studies on Ageing, University of Sheffield, Barnsley Hospital

Introduction
Evidence exists that falls are preventable, but they still remain a major cause of morbidity in hospitalised elderly patients with paucity of evidence for successful preventive strategies. The aims of this study were therefore to explore risk factors associated with falls in a hospitalised cohort of elderly patients.

Methods
Consecutive181 patients in an acute integrated medical unit who had fallen were matched for age with 181 patients in the next bed who had not fallen. Each fall, control patient and their primary nurse were interviewed. Recorded information included demographic and clinical data, mental and functional status, and fall details.

Results
We found 46% (84 of 181) fallers on benzodiazepines compared with 27% (48 of 181) controls (p<0.001). More fallers 20% (34 of 181) had their benzodiazepines prescribed during current admission compared with 7% (13 of 181) controls (p<0.001). Overall 25% (45 of 181) of the fallers had fallen before during current admission. A previous fall, short-acting benzodiazepines, and the need for maximum assistance were the significant predictors of falling in hospital, odds ratios were 5.6 (95% C.I 2.7 - 11.6), 2.3 (95% C.I 1.4 - 3.7) and 3.1 (95% C.I 1.9 - 5.2) respectively. Falls were least likely to occur during visiting hours with a peak incidence during nighttime.

Conclusion
Falls were more likely to occur at night. Benzodiazepine use and previous falls were associated with falls in hospital.
FALLS, FRACTURES & TRAUMA

THE IMPACT OF A NURSE PRACTITIONER ON A REHABILITATION UNIT FOR OLDER PEOPLE

L. COOKE, D. SHAH AND D. KING
Dept of Medicine for the Elderly/Rehabilitation, Victoria Central Hospital, Wallasey

Introduction
As a result of a reduction in medical hours at a rehabilitation unit [RU] for older people a baseline audit was conducted from June 1997 to February 1998. The audit looked at the demands of the service and proposes a cost-effective alternative to meet service demands and improve the quality of service provided. A second audit [March 1999 to January 2000] was completed to determine the degree of impact the Nurse Practitioner [NP] had on the service.

Methodology
Two rehabilitation wards [57 beds] were audited. The nursing staff kept a daily log of required interventions. The NP checked the log and actioned any intervention within her remit. The remaining interventions were actioned by the medical support at that time.

Results
March 1999 to July 1999, the NP’s impact was as follows, reviewing patients 7%, admissions 17%, venepuncture 75%, cannulation 86% and ECG’s 79%. With additional training there was a further increase in NP activity from August 1999 to January 2000, 20%, 30%, 86%, 100% and 100% respectively. Substantial medical time was therefore saved.

Conclusion
The intervention of a Nurse Practitioner enabled the withdrawal of medical hours by 60% with no effect on service provision in a rehabilitation unit for older people. The role of the Nurse Practitioner continues to be developed.

24-HOUR AMBULATORY ELECTROCARDIOGRAPHY IN RECURRENT FALLS - AN UNHELPFUL INVESTIGATION

J. DAVISON, S. BRADY AND R.A. KENNY
Cardiovascular Investigation Unit and Cardiology Dept, Royal Victoria Infirmary, Newcastle-upon-Tyne

Introduction
24-hour ambulatory electrocardiography (ECG) is often used to investigate recurrent fallers. There is little evidence that it aids management. We prospectively assessed 24-hour ECGs in older recurrent fallers and case controls.

Methods
Subjects – n=129, age >65, presenting to A&E with ≥2 falls in 12 months. Controls – n=73, no falls in last 2 years. 24-hour ECG recordings appraised to identify: a) prevalence of abnormalities (Bass criteria – Bass EB; Arch Intern Med. 1990;150:1073-8); b) correlation between symptoms and abnormalities.

Results
Mean age fallers 76 years (SD±6.3) vs. 73 (SD±5.2) p=0.001. Hypertension commoner in fallers 36% vs. 22%, p=0.04. Baseline characteristics otherwise matched; 33% male vs. 43%, p=0.172. IHD 35(27%) in fallers vs. 11(15%), p=0.056, diabetes 18(14%) vs. 4(6%), p=0.098, atrial fibrillation 9(7%) vs. 2(3%), p=0.334, beta blocker use 30(23%) vs. 11(15%), p=0.203, calcium antagonists 24(19%) vs. 9(12%), p=0.323 and other AV blocking agents 5(4%) vs. 1(1%), p=0.421. Electrocardiographic abnormalities found in 67(52%) fallers and 30(41%) controls, p=0.146. Mild symptoms occurred in 11(8%) of fallers vs. 9(12%) of controls, p=0.490. No symptoms correlated with arrhythmia. No patient fell during monitoring.

<table>
<thead>
<tr>
<th>Mobitz Type II</th>
<th>Fallers (n=129)</th>
<th>Controls (n=73)</th>
<th>Fisher's Exact</th>
</tr>
</thead>
<tbody>
<tr>
<td>(n=129)</td>
<td>1(1%)</td>
<td>0(0%)</td>
<td>1.000</td>
</tr>
<tr>
<td>Pauses ≥2 seconds</td>
<td>8(6%)</td>
<td>5(7%)</td>
<td>1.000</td>
</tr>
<tr>
<td>VT Tachycardia ≥3 beats</td>
<td>5(4%)</td>
<td>3(4%)</td>
<td>1.000</td>
</tr>
<tr>
<td>VT Tachycardia ≥30 beats</td>
<td>46(36%)</td>
<td>20(28%)</td>
<td>0.725</td>
</tr>
<tr>
<td>Paroxysmal Atrial Fibrillation</td>
<td>6(5%)</td>
<td>3(4%)</td>
<td>1.000</td>
</tr>
<tr>
<td>Bradycardia 30-39bpm</td>
<td>10(8%)</td>
<td>2(3%)</td>
<td>0.218</td>
</tr>
<tr>
<td>Paroxysmal supraventricular tachycardia &gt;10 beats at &gt;150bpm</td>
<td>14(11%)</td>
<td>8(11%)</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Conclusions
Multiple abnormalities are present on 24-hour ECG in both fallers and controls, with no significant differences in the prevalence of different abnormalities. 24-hour ECG is an unhelpful investigation in recurrent falls and should not be routinely performed.
FALLS, FRACTURES & TRAUMA

A RATIONALE FOR VITAMIN D PRESCRIBING IN A FALLS CLINIC POPULATION

J.K. DHESI, J.C. CLOSE, C. MONIZ AND T. ALLAIN
Dept of Health Care of the Elderly, GKT School of Medicine, London

Introduction
Vitamin D (25OHD) insufficiency is common, frequently unrecognised and a contributor to fracture risk. An integrated falls assessment should incorporate identification and treatment of risk factors for fracture, such as 25OHD insufficiency, an NSF priority. At present identification of 25OHD insufficiency relies on venepuncture, is expensive and may be unnecessary if clinical predictors were identified. To develop a rationale for vitamin D prescribing in a falls clinic population, we examined the prevalence and predictors of 25OHD insufficiency in a prospective observational study of patients attending a falls clinic.

Methods
Using a pre-existing proforma, a medical and social history, an abbreviated mental test and physical examination were recorded for 400 consecutive patients aged >65 attending a falls clinic. Serum biochemistry and 25OHD were measured.

Results
Mean age was 78.3 (range 65-97), 73.3% were female, 96% lived in their own homes, and 90% had AMT >8/10. 17% of the patients were housebound. Patients attending the clinic had a mean 25OHD of 16.5ug/L (7.8ug/L). 72.5% of patients had 25OHD levels < 20ug/L, and 98.7% <40ug/L. Multiple regression analysis identified the number of times out per week (p<0.02) and serum albumin (p<0.03) as independent variables for 25OHD level. No significant association between vitamin D and other clinical or biochemical factors existed.

Conclusions
Vitamin D insufficiency is highly prevalent in a falls clinic population. Independent predictors, outdoor activity and albumin were identified, but predictive value was low (multiple r^2 =0.06). In view of the high prevalence, benefits of supplementation, and lack of toxicity at therapeutic doses, it may be justified to treat all falls clinic patients, without recourse to 25OHD measurement.

COUGH SYNCOPE?

R. DUTTA, D. DUTTA AND J. ROWE
Well Balanced Clinic, Moseley Hall Hospital, Birmingham

Introduction
Investigation of subjects with syncope involves subjecting them to physiological stresses such as carotid sinus massage or head up tilt testing whilst observing any consequent hypotensive response. Although cough syncope is well described it doesn’t feature as a significant cause in any of the large published series. A chance observation of a vasodepressor response to coughing in some patients led us to study this phenomenon.

Methods
23 consecutive patients with syncope were asked to cough strongly while supine on a tilt table, with beat to beat blood pressure monitoring (Finapres). No cough was protracted. This was repeated once supine and again when upright. All subjects were also investigated for orthostatic hypotension and 13 went on to have carotid sinus massage.

Results
The median age was 80 years (Range: 72 to 92), 19 subjects were female and 8 of the sample had chronic obstructive airways disease. Ten of the 23 had orthostatic hypotension. The thirteen subjects who signed consent forms for carotid sinus massage included 2 who had a vasodepressor response. When asked to cough 15 patients had a drop in systolic pressure from the pre cough level of >30mmHg and in 10 this exceeded 50mmHg.

Conclusions
Either cough syncope is orders of magnitude more common than previously reported or the validity of inferring a cause from a hypotensive response to a physiological challenge is questionable. Coughing may be a safer way of demonstrating cardiovascular instability than other investigations which include cardiac arrest and stroke as recognised complications.
CLINICAL UTILITY OF 24HR ECG MONITORING AND CAROTID SINUS STUDIES IN INVESTIGATION OF UNEXPLAINED FALLS IN A SPECIALIST CLINIC SETTING

S.H.S. CALVERT AND J.C.T. CLOSE
Clinical Age Research Unit, Department of Health Care of the Elderly, Guy's, King's and St Thomas' School of Medicine, King's College London

Introduction
Despite a relatively low diagnostic yield, the 24hr ECG is routinely used in the investigation of unexplained falls in older people and is widely available in most hospitals. Carotid sinus studies (CSS) are less readily available yet potentially can produce clinically useful data on remediable causes of falling in the older population. We compared the clinical utility of the 2 methods of investigation in consecutive individuals referred from the Falls Clinic with unexplained falls/collapse.

Methods
63 patients were identified as having had both 24hrECG monitoring and carotid sinus studies. Tests were recorded as positive if they showed findings which could contribute to a fall (pauses >=3sec, supraventricular arrhythmia >10beats, any ventricular tachyarrhythmia, orthostatic hypotension or a 50mmHg drop in BP on carotid sinus massage). The data was analysed using a Chi square test.

Results
Median age was 76 (range 60-100) and 51/63 were female. There were 5 24hr ECG’s and 22 CSS which identified possible contributory causes of a fall. 2 of the positive 24hr ECG’s also had positive CSS. Carotid sinus studies were more likely to yield a potential diagnosis (p=0.0002).

Conclusions
When investigating the cause of unexplained falls in older people, the use of formal carotid sinus testing with appropriate equipment is far more likely to produce a clinically useful diagnosis. This should be considered when channeling resources in investigative technology to support specialist clinics.

LOCATION OF FALL AND MORTALITY AMONG OLDER MEN AND WOMEN

P.A. BATH
Centre for Health Information Management Research, Department of Information Studies, University of Sheffield, Sheffield, UK

Introduction
Indoor and outdoor falls have different aetiologies and may have different outcomes. The relationship between these falls and long-term mortality remains unclear. The aim of this research was to examine the effect of indoor and outdoor falls on mortality among community-dwelling older men and women.

Methods
Using data from the Nottingham Longitudinal Study of Activity and Ageing, relationships between indoor and outdoor falls and fifteen-year mortality were explored in separate unadjusted and adjusted Cox regression models for men and women.

Results
Overall, 145 people (14%) reported falling indoors and 210 people reported falling outdoors (20%). Location of fall was associated with age among women (p<0.001). In unadjusted models, there was decreased mortality among women who had fallen outdoors (Hazard Ratio (HR)=0.78; 95% confidence intervals (CI) =0.61,1.00; p<0.05) compared with those who had not fallen. This was not significant when adjusting for age. There was increased mortality among women (HR=1.55; 95%CI=1.21-1.98; p<0.001) and men (HR=2.06; 95%CI=1.43-2.96; p<0.001) who had fallen indoors. The increased mortality among women was not significant when adjusting for age and health. The increased mortality among men who had fallen indoors remained significant (HR=1.52; 95%CI=1.01-2.28; p<0.05) even when adjusting for demographics, physical and mental health and physical and social activity.

Conclusions
Younger old women may be undertaking activities that have an overall protective effect while increasing their risk of falling outside. The increased mortality among older men who fall inside is not explained by health and activity. Interventions to prevent falls need to consider their longer-term health and well-being. Future research examining the outcomes of falls needs to consider indoor and outdoor falls in older men and women separately.
PROXIMAL FEMORAL FRACTURE REHABILITATION: A RANDOMISED CONTROLLED TRIAL OF ELECTRICAL STIMULATION OF THE QUADRICEPS

V. BRAID, M. BARBER, S.L. MITCHELL, B.J. MARTIN, S.J. GRANT, M. GRANAT AND D.J. STOTT
Academic Section of Geriatric Medicine, Glasgow Royal Infirmary

Introduction
Proximal femoral fracture (PFF) is associated with high levels of disability. Quadriceps weakness may be a factor in poor outcome. This study aimed to assess whether electrical stimulation (ES) to quadriceps of the fractured leg increases leg extensor power (LEP) and decreases disability.

Methods
A pragmatic, randomized controlled trial of elderly post-surgical PFF patients, comparing 6 weeks of supplementary ES (15 patients, mean age 81 years) to standard physiotherapy alone (11 patients, mean age 80 years). The ES on:off duty cycle was 7:23 seconds. The dosage was 36 cycles per session, delivered daily as an in-patient and twice weekly after discharge. Primary outcome measures were LEP (Nottingham Power Rig); functional mobility (Elderly Mobility Scale); disability (Barthel Index) and quality of life (Nottingham Health Profile) at 6 weeks (the end of the intervention).

Results
11 (73%) of the intervention patients tolerated sufficient stimulation intensity to produce only palpable or visible contractions, but no leg movement. A median of 10 (IQR 6, 17) ES sessions were given to those who reached the 6 week assessment (13 (87%)). At this point, there was no significant difference in LEP improvement, and no significant difference in EMS or Barthel score, in the ES group compared to the control. Respective values for LEP were; fractured leg mean improvement of 0.26w/kg (SE 0.05) versus 0.31w/kg (SE 0.1); non-fractured leg mean improvement of 0.21w/kg (SE 0.08) versus 0.17w/kg (SE 0.08).

Conclusion
ES of quadriceps did not promote increased LEP or reduce disability following PFF. Low stimulation tolerance levels may explain the lack of effect.