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(Accepted 6 September 1996)

Increasing number and incidence of osteoporotic fractures of the proximal humerus in elderly people

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The most common forms of osteoporotic fractures occur at the distal forearm, spine, and hip. Treating less common fractures (such as those of the proximal humerus, pelvis, knee, and ankle¹) is also demanding and expensive. Yet epidemiological information on these is scarce; no nationwide study of the incidence of the osteoporotic fractures of the proximal humerus has been reported.

Subjects, methods, and results

We defined an osteoporotic fracture of the proximal humerus as a fracture occurring in people aged ≥ 60 that resulted from minimal trauma only—that is, a fall from standing height or less. We selected all such patients admitted to Finnish hospitals in 1970-2, 1974-5, 1978-80, 1983-5, 1988-9, and 1991-3 for primary treatment of first fracture of the proximal humerus from the National Hospital Discharge Register. Previous studies have found the accuracy of the register to be 96-97%.²⁻⁴ The study covered the entire Finnish population. We adjusted for the subjects' age by using the mean population between 1970 and 1993 as the standard population and expressed fracture incidences as the number of cases/100 000 persons/year by sex and by age.

The total number of osteoporotic fractures of the proximal humerus increased steadily during the study period, from 212 in 1970 to 844 in 1993 (an average increase of 13% a year). The mean age of patients also increased, from 72.1 years (1970) to 76.2 years (1993). The age adjusted incidence (per 100 000 people aged

Fig 1—Age adjusted incidence of osteoporotic fractures of the proximal humerus in inhabitants of Finland aged ≥ 60 during 1970-93

≥ 60) of fractures increased during 1970-93 from 50 to 106 in women and from 14 to 41 in men (fig 1).

Comment

We found a steady increase in the age specific incidences for fractures of the proximal humerus in both sexes and in all ages over the course of the study. In Finland not only is the incidence of fractures increasing but also the population at risk is increasing—a development likely to accelerate in the near future. The increasing mean age of patients is likely to mean more problems in treating these fractures, including longer times for healing and rehabilitation and more complications of fractures such as non-unions. Additionally, a higher mean age of patients is likely to increase morbidity and mortality.

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BMJ 1996;313:1051-2

Our findings resemble the secular trends of hip fractures in Finland: their incidence nearly trebled between 1970 and 1993, and the age specific incidences increased in both sexes and in all age groups.⁵ The reasons for the increase in osteoporotic fractures are not known. For hip fractures, the usual explanations are decreased bone mass and density (decreased bone strength) and the increased propensity of elderly people to fall (impaired balance, coordination, reaction time, and muscle strength).⁵ In other words, it has been suggested that elderly people may be less healthy and functionally less capable today than in the past.

If the incidence of fractures continues to increase at the same rate the annual number of first osteoporotic fractures of the proximal humerus in Finland will be about 1000 by the year 2000. However, the largest Finnish age cohorts will reach the average age for osteoporotic fractures of the proximal humerus between the years 2020 and 2030, and thus the number of these

fractures is expected to increase exponentially during this period. Therefore, vigorous preventive measures, such as preventing osteoporosis and falls in elderly people, should be urgently adopted to control the increasing burden of these age related fractures.

Funding: The Finnish Ministry of Health.
Conflict of interest: None.

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(Accepted 11 June 1996)

Survey of paramedic skills in the United Kingdom and Channel Islands

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A national training programme for paramedics was adopted in 1984 on government recommendation.¹ Regional training programmes were established under the auspices of local steering committees, and paramedics throughout Britain were trained in endotracheal intubation, intravenous cannulation, cardiac monitoring and defibrillation, and the use of selected parenteral drugs. Further skills could be introduced on the basis of local need.

We believed that regional variation could not be explained by demographic and infrastructural differences alone. We therefore undertook a national survey of the extended skills currently practised by ambulance paramedics.

Subjects, methods, and results

In April 1995 we sent questionnaires to the chief executives of the 47 ambulance trusts in the United Kingdom and Channel Islands and followed up by telephone calls. The respondents were asked to identify which of 108 extended skills were currently being taught and which were expected to be taught by the end of 1995.

We obtained a 100% response rate after telephone follow up. The average number of skills adopted by paramedic services was 12 (range 9 to 16) for adults and 8 (3 to 11) for children. The box shows the skills supported by all ambulance services, representing the national minimum standard.

All 47 trusts supported adult orotracheal intubation; 41 services permitted its use in children, but only 35 in children under 7 years. One service claimed not to allow bag and mask ventilation of children. Nebulised salbutamol could be given to adults and children by all services, but only 36 measured peak flow rate first.

All services had adopted defibrillation of adults, and 32 also used it for children. Of these 32, two services did not train paramedics to intubate children and in five paramedics could not give fluids or drugs intravenously.

All 47 regions cannulated adults and 44 children, but the age of child and the size of cannulae available varied. Only two regions trained paramedics to use intraosseous needles, and one supported scalp vein cannula-

tion. For volume replacement in adults one region used crystalloid exclusively, three only colloid, and 43 both.

All paramedics were taught to measure blood pressure and the Glasgow coma scale. Thirty three regions also taught trauma scoring and 40 pulse oximetry. Only nine services trained paramedics to interpret 12 lead electrocardiographs.

The mean number of drugs permitted for use was 10 (7 to 13) in adults and 6 (2 to 10) in children. In addition to the drugs listed in the box the most commonly used were adrenaline 1:1000 for anaphylaxis (29), rectal or intravenous diazepam (40), glycerine trinitrate (43), nalbuphine (31), and naloxone (29).

Obstetric and neonatal skills have recently been added to paramedic training. Only 11 services taught the obstetric module, but 12 more expected to include this by 1996. Ergometrine was used in five services (11 more by 1996). Neonatal resuscitation was taught in 39 services (6 more by 1996). Fifteen services permitted neonatal intubation.

Comment

This study confirms the heterogeneity in paramedic services. The skills taught to all paramedics have changed little since the introduction of national training. Some additional skills have been adopted

Skills taught to paramedics in all British ambulance services (April 1995)

Adults:

Oropharyngeal airway
Orotracheal intubation
Bag and mask ventilation
Defibrillation
Peripheral vein cannulation
Adrenaline 1:10 000
Atropine
Glucagon
Lignocaine
Nebulised salbutamol

Children:

Oropharyngeal airway
Nebulised salbutamol

Assessment:

Glasgow coma scale
Blood pressure

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BMJ 1996;313:1052-3