EQUESTRIAN INJURIES – A ONE YEAR PROSPECTIVE STUDY

G. R. McLATCHIE, MB, ChB, FRCS

Surgical Registrar, Dumfries and Galloway Royal Infirmary

ABSTRACT

A one year prospective study of equestrian injuries was carried out in an area where horse riding is a popular pursuit. 115 persons suffered injury – eighty females and thirty-five males of whom sixty were under fifteen years of age. No fatalities were recorded and there were 0.2 injuries per 100 rides. Most injuries were minor and to the musculo-skeletal system. Visceral and cerebral injuries were not common but the former were life threatening in all cases. It is concluded that young riders should be supervised.

INTRODUCTION

Equestrian Injuries – Definition

The injuries reported in this article are only those which presented acutely to the Casualty Department at Dumfries and Galloway Royal Infirmary. They are injuries associated with horses and riding.

Dumfries and Galloway is a rural area in the south west of Scotland with a population of 143,000. Pony trekking and horse riding are both popular pursuits, especially during the summer months. There is a full annual calendar of events (Table I) and from this it is calculated that approximately 50,000 hours are spent riding each year. Riders range from casual trekkers to experienced equestrians. There are fifteen officially recognised establishments in the region which are licensed by the local authority. Each year a veterinary surgeon with a special interest in horses examines the animals and inspects their saddles and bridles to ensure their safety for use. 250 horses and ponies are owned by such establishments but a further 300 are privately owned.

TABLE I

Calendar of events in Dumfries and Galloway

Event	Frequency	Number of riders
Dumfriesshire Hunt	Twice weekly (Nov-March)	40-80
Hunt Point to Point	April	80
Hunter Trials	August	100
Overbanks Trials	Fortnightly (summer)	100
Show jumping	Summer	40
Riding of the Marches	June	200
Rideouts	May (weekly)	100

METHODS

The study was prospective and carried out during the period August, 1977 to August, 1978. During this time all patients referred to Dumfries and Galloway Royal Infirmary with acute riding injuries were registered. Each patient was interviewed and the information recorded (Table II). After interview and examination it was decided whether the patient required in- or out-patient treatment.

TABLE II
Recorded Information

Rider	Age, Sex, Riding Experience
Type of Horse	Private Horse/Owned by Riding School
Season	Summer (May-October) Winter (November-April)
Use of Riding Cap	Cap/No Cap
Type of Accident	Bite/Kick/Trampling/Compression/Fall
Type of Injury	Musculoskeletal/Cerebral/Visceral
Type of Treatment	Admitted/Not Admitted
Consequences of Accident	Residual Effects/Complete Recovery

RESULTS

Age and Sex Distribution (Figure 1)

Seventy per cent of injuries occurred in female riders and fifty per cent in children under the age of fifteen years.

Type of Accident (Table III)

The commonest type of accident was falling from the horse and this caused most musculo-skeletal injuries. Kicks from the horse were also a common cause of injury. Trauma from compression, bites and trampling were not common.

Figure 1 Sex and Age (per cent) distribution

TABLE III
Type of Accident

Injury	Number of Cases
Bite	7
Trampling	5
Compression	3
Kick	17
Fall	83
TOTAL	115

Classification of Injuries (Tables IV, V, VI)

The injuries can broadly be classified into three groups according to the anatomical site.

Musculo-skeletal injuries (fractures, dislocations and sprains, predominantly in the upper limb) accounted for ninety-two cases. This is consistent with the involuntary extension of the upper arm to break the fall.

TABLE IV
Musculoskeletal Injuries –
Fractures/Dislocations/Sprains– 80%

Site	Number of cases
Upper Extremity	47
Lower Extremity	12
Other (e.g. pelvic, spine, ribs)	4
Minor Injuries (bruises, 'sprains')	29
TOTAL	92

There were sixteen cerebral injuries (Table V) and in none was there radiological evidence of skull fracture. Eight riders were not wearing caps at the time of accident. The diagnosis of concussion was made if there was a period of disorientation, pre- or post-traumatic amnesia or unconsciousness following the accident. In no case was there any residual brain damage. Foster (1976), Allen (1976) and D'Abreu (1976) all reported cases of brain damage in jockeys and recommend the wearing of appropriate safety headgear.

TABLE V
Cerebral Injuries – 15%

Injury	Number of cases
Concussion	16

There was no radiological evidence of skull fracture in any case.

Visceral injuries were serious. There were two cases of traumatic pneumothorax, two cases of rupture of the spleen and one case of rupture of the liver. In none of these cases was there radiological evidence of rib fracture. Bolton et al (1973) found that thirty-six per cent of all patients with serious visceral injury due to blunt abdominal trauma suffered associated lower rib fractures and this was especially so when the spleen or liver was involved.

TABLE VI
Visceral Injuries – 5%

Injury	Number of Cases
Pneumothorax	2
Ruptured Spleen	2
Ruptured Liver	1
TOTAL	5

Injuries requiring In-patient Treatment (Table VII)

Twenty-six patients required in-patient treatment and the total time in hospital was 200 days.

Orthopaedic

One patient (a fifty-two year old woman) fell off her horse and was dragged along with her foot still in the stirrup. She sustained multiple superficial lacerations and mid-tarsal dislocation as a result of being dragged and it is felt that the use of quick release stirrups might obviate not only this rather rare dislocation but also other injuries due to being dragged by the horse. Quick release

TABLE VII
Injuries which required admission to hospital
26 patients required admission

Injury	Number of cases	Treatment	Time spent in hospital – Days
Musculoskeletal			
Supracondylar Fracture	1	Manipulative Reduction	7 Days
Midtarsal Dislocation		Manipulative Reduction	8 Days
Fractured Os Calcis	1	Bed Rest	
Fractured Shaft of Femur	1	Immobilisation and Traction	56 Days
Pelvic Fracture (Pubic Rami)	1	Immobilisation	30 Days
Crush Fracture	1	Immobilisation and Physiotherapy	21 Days
Visceral			
Ruptured Spleen	1	Splenectomy	10 Days
Delayed Splenic Rupture	1	Splenectomy	15 Days
Ruptured Right Lobe Liver	1	Hepatic Lobectomy	21 Days
Pneumothorax (Surgical Emphysema)	2	Chest Drain	77 Days
Cerebral			
Concussion, Skull Fracture	16	Observation for 24 hours or more	25 Days
TOTALS	26		200 Days

stirrups require development. Several accidents have occurred from the stirrups releasing themselves at inappropriate moments (Robson 1978).

Patients with femoral and pelvic fractures required lengthy stays in hospital but their convalescence was without incident.

Cerebral

Those patients with cerebral injury who were thought to have been concussed were admitted for observation for twenty-four hours or more. None had any complications nor residual symptoms.

Visceral

The first case of rupture of the spleen occurred in a ten year old girl who underwent splenectomy and recovered without incident.

Delayed rupture of the spleen occurred in a forty-six year old man whose mount was startled by a low flying jet fighter (there is an air force training base in the area). He first had left upper abdominal tenderness but there was no radiological evidence either abdominally or thoracically of injury and a four quadrant tap was negative. His condition improved and he was discharged four

days later but was re-admitted the same evening having collapsed when straining at stool. At laparotomy a large splenic haematoma and tear were found. He underwent splenectomy and recovered without incident.

The case of rupture of the liver occurred in a sixteen year old girl who fell from her horse. She was severely shocked with an unrecordable blood pressure. After initial resuscitation, laparotomy revealed a large laceration extending over the dome of the right lobe of the liver and deeply into the porta hepatis. This was not amenable to simple suture and the right lobe of the liver was excised. She recovered uneventfully and now has no residual disability.

DISCUSSION AND CONCLUSIONS

Horse riding seems to be a relatively safe pursuit with an incidence of only 0.2 injuries per 100 rides and this compares favourably with other popular sports such as rugby football (Adams, 1977). However, as there is a high incidence of injury in young riders, they should be supervised carefully. Although our study showed head injuries not to be serious this was not so in the studies of Barber (1973) and Gierup et al (1976) where head injuries accounted for their only fatalities. We therefore endorse their view that adequate headgear should be worn. The only life threatening injuries in our series

were visceral and these would probably have occurred despite wearing the acceptable riding clothing illustrated in the following article. Surprisingly, there were few injuries to the vertebral column.

ACKNOWLEDGEMENTS

I wish to thank Sisters Nicol, Kirkaldy and the casualty staff at Dumfries and Galloway Royal Infirmary for

their co-operation in registering and recording these riding injuries. I am most thankful to Mr. J. Neilson, Consultant Surgeon, Dumfries and Galloway Royal Infirmary, for his helpful advice and criticism. I acknowledge the help of Mr. W. Allison, Veterinary Surgeon, Dumfries who provided information regarding the number of equestrians in the area. I wish to thank Dr. H. E. Robson for providing illustrations for this text. I also wish to thank the secretarial staff at Dumfries and Galloway Royal Infirmary for preparing the manuscript.

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