Spinal Cord (2012) 50, 931

www.nature.com/sc

LETTER TO THE EDITOR

The prevalence of pulmonary embolism in chronically paralyzed subjects: a review of available evidence

Spinal Cord (2012) **50,** 931; doi:10.1038/sc.2012.114; published online 9 October 2012

Frisbie and Sharma[1] draw attention to the risk factor of pulmonary embolism following an acute spinal injury. They state that it is generally considered to be rare beyond the first 3 months of paralysis and that the concept has grown that chronic spinal injuries develop some protection from pulmonary embolism after 3 months. They reviewed the literature through a PubMed survey and made a study of 27 relevant articles.

We have been interested in the incidence and prevention of pulmonary embolism since 1970.[2] Initially we had considered that pulmonary embolism did not occur after 3 months and therefore gave anti-coagulant therapy for this period. In 1981, Masri and Silver[3] made a study of 102 consecutive male traumatic spinal cord injury patients admitted between 1976 and 1979 and recorded 2 patients who had a pulmonary embolism after 90 days and 129 days after injury. In view of this high risk, we extended the regime of anticoagulants to 6 months for patients with an established high-risk factor that is, those patients who had a massive deep vein thrombosis or a pulmonary embolus prior to admission to the centre.

The problem was re-examined in 1991 after Silver and Noori[4] became aware of five patients, not all under their care, who had had a pulmonary embolus more than 90 days after injury. All had received a full course of therapeutic anticoagulation with oral anticoagulants for periods from 49 to 90 days. All five patients developed pulmonary emboli, two of which were fatal, at a period greater than 90 days after injury and despite having had a course of anticoagulation. These cases reinforced our view that there is a need to continue prophylactic anticoagulant therapy for a longer period in high-risk patients those with obesity, previous deep vein thrombosis and pulmonary embolus. This experience is not unique as Perkash[5] in 1978 also demonstrated late pulmonary emboli more than 90 days after injury.

It is not surprising that patients develop deep vein thrombosis since Todd *et al.*[6] in 1976 showed by fibrinogen leg scanning that all patients in a series developed deep vein thrombosis in their lower limbs after a spinal cord injury.

Moreover, in 1968, Morrell and Dunhill[7] showed that all patients who died after admission to hospital had sub-clinical evidence of pulmonary emboli.

Frisbie and Sharma's article is to be welcomed in drawing attention to a well-documented problem.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

JR Silver[1] and WS El Masri[2]
[1]*Stoke Mandeville Hospital, Stoke Mandeville, UK and*
[2]*Spinal Injuries, Oswestry, UK*
E-mail: jrussellsilver@btconnect.com

1 Frisbie JH, Sharma GVRK. The prevalence of pulmonary embolism in chronically paralyzed subjects: a review of available evidence. *Spinal Cord* 2012; **50**: 400–403.
2 Silver JR, Moulton A. Prophylactic anticoagulant therapy against pulmonary embolism in acute paraplegia. *Br Med J* 1970; **2**: 338–340.
3 El Masri WS, Silver JR. Prophylactic anticoagulant therapy in patients with spinal cord injury. *Paraplegia* 1981; **19**: 334–342.
4 Silver JR, Noori Z. Pulmonary embolism following anticoagulation therapy. *Int Disabil Stud* 1991; **13**: 16–19.
5 Perkash I. Experience with the management of thrombo-embolism with spinal cord injuries. Part 1. Incidence, diagnosis and role of some risk factors. *Paraplegia* 1978; **16**: 322–331.
6 Todd JW, Frisbie JH, Rossier AB, Adams DF, Als AV, Armenia RJ *et al.* Deep venous thrombosis in acute spinal cord injury: a comparison of 1251 fibrinogen leg scanning, impedance plethysmography and venography. *Paraplegia* 1976; **14**: 50–57.
7 Morrell MT, Dunhill MS. The post-mortem incidence of pulmonary embolism in a hospital population. *Brit J Surg* 1968; **55**: 347.