

COMPRESSION STOCKING RESEARCH IMPROVES CARE OF STROKE PATIENTS



Fitting graduated compression stockings

More than 130,000 people in the UK have a stroke each year, with around a quarter of them dying within six months. Deep vein thrombosis (DVT), and resulting pulmonary emboli, are a major cause of these deaths. Historically, graduated compression stockings have been used as a means of preventing DVT in post-stroke patients. However, thanks to studies by a team of researchers led by Professor Martin Dennis, Chair of Stroke Medicine at the University's Centre for Clinical Brain Sciences, the effectiveness of this often uncomfortable treatment has been disproven, resulting in greater comfort for patients and valuable data for future research.

YEARS OF RELIANCE ON UNPROVEN TREATMENT

While many of the pulmonary emboli developed in immobile post-stroke patients are minor, a great number still result in death or severe symptoms. Up to one third of deaths in hospital after stroke are due to pulmonary emboli.

Because they were thought to increase blood flow in the veins of the legs, graduated compression stockings were the preferred treatment for immobile patients. At that point, no reliable randomised trial evidence was available concerning the effects of the stockings. This suggested the widespread use of an unproven treatment.

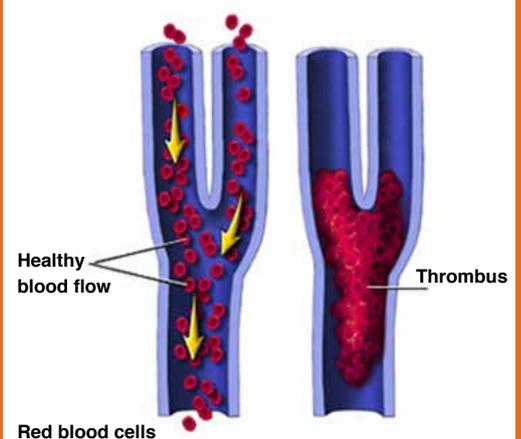


PULMONARY EMBOLISM IN IMMOBILE PATIENTS

Pulmonary embolism is the blockage of the main artery of the lung or its branches by a substance, usually a blood clot, from elsewhere in the bloodstream. It most commonly arises from blood clots in the veins, deep in the calf and thigh, so-called deep-vein thrombosis (DVT).

DVT occurs in stroke patients because they are immobile and often have weakness of the legs which causes blood to stagnate in the leg veins. Also, their blood is often stickier than normal because of dehydration and infection.

Cut sections through veins



Healthy vein compared with thrombus





Use of stockings is now not recommended



In a survey conducted in 1999, 54 per cent of physicians either thought the stockings were of no use, or were uncertain of their value. This information led to Professor Dennis and his Edinburgh colleagues establishing a series of trials to assess the effect of graduated compression stockings when used by stroke patients. Between 2001 and 2009, two randomised trials, called CLOTS 1 and CLOTS 2, assessed the progress of more than 5,000 volunteer stroke patients who were allocated to wear stockings (both thigh length and below the knee) compared with those who did not wear them.

SURPRISING RESULTS REVEAL COMPLICATIONS

The team's findings showed that the routine application of full-length stockings did not reduce the risk of deep vein thrombosis or pulmonary embolism. In the second trial, the results demonstrated that those stroke patients allocated knee-length stockings actually had a significantly higher risk of deep vein thrombosis than those allocated full-length stockings.

Proving the ineffectiveness of the treatment was a major breakthrough. However, the team also discovered that the use of graduated compression stockings often produced a negative effect: patients fitted with the stockings had a higher risk of skin problems on their legs, including uncomfortable and potentially dangerous skin ulcers. Rather than preventing deep vein thrombosis, it appeared the stockings were in fact exposing a large number of patients to added medical complications.



This Edinburgh-based study has changed health guidelines worldwide, with those of the UK, Scotland, Singapore, Canada, the US, Italy and South Africa no longer recommending the use of stockings for stroke patients.

As well as easing patient discomfort, the changes have saved an estimated £21 million in unnecessary healthcare costs, such as that associated with the treatment of those who experience skin breaks caused by stocking use.



Skin ulcers can be painful and dangerous

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