Left: Oblique view of lumbar spine showing L1, L2, L4, and L5 vertebrae with vestiges of posterior elements of L3 (arrowed). Note codfish appearance of L2, L4, and L5.
Right: lateral view of lumbar spine showing narrowing of disc spaces of T12 and L1 and kyphos between L2 and L4, pseudo-Schmorl's nodes at upper and lower surfaces of T12, and bridging anterio-lateral osteophytes between L2 and L4. Only vestiges of posterior elements of L3 body are present (arrowed)

thinning of vertebrae. There was anterior wedging of the L2; narrowing of T12-L1, L1-L2, and L5-S1 disc spaces; and codfish appearance of L2, L4, and L5. Pseudo-Schmorl's nodes were seen in T11 and both upper and lower surfaces of T12. Bridging anterolateral osteophytes were seen between L2 and L4. Most impressively, there was a complete effacement of L3, with only vestiges of the posterior elements remaining (figure).

The patient, who presented with mild painful crisis, received analgesics and antimalarial drugs and was discharged taking folic acid, multivitamins, and malarial prophylactic drugs. Surgical opinion on the gall stones favoured non-intervention as they were not causing symptoms. He was referred back to the consultant medical outpatient clinic.

Comment

To our knowledge our patient is the first patient with sickle cell haemoglobinopathy with such ubiquity and range of radiological changes. The pathology of the radiological features is based on infarction after anoxia, with or without secondary infection, giving osteomyelitis and marrow hyperplasia after recurrent haemolysis and the resulting anaemia.[3 4] As our patient recovered from his paraplegia after receiving only analgesics, haematinics, and antirheumatic treatment and without antituberculous treatment, it is unlikely that he had had tuberculosis of the spine. The vanishing of the vertebra, spondylitis, pseudo-Schmorl's nodes, and narrowed disc spaces may possibly be explained on the basis of vasco-occlusive infarction, secondary infection, compressive forces along the spine, and reactive bone responses.

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Colour coded duplex sonography in suspected deep vein thrombosis of the leg

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Clinical diagnosis of deep vein thrombosis of the leg is inaccurate.[1 2] Venography is the most reliable method of diagnosis, but it has several disadvantages in that it is invasive, painful, and expensive; may induce phlebitis, thrombosis, and allergic reactions; and cannot be done in patients with severe heart or renal failure or in pregnant women.[3] Many non-invasive diagnostic methods have therefore been developed in the past decade. Of these only duplex sonography has comparable accuracy.

We report the results of a prospective study in patients with suspected deep vein thrombosis evaluated by both colour coded Doppler sonography and venography.

Patients, methods, and results

We studied 97 inpatients and outpatients (mean (SD) age 68 (17) years) with clinically suspected deep vein thrombosis. Twelve postoperative inpatients had been given anticoagulant drugs for one to six days. The other 85 patients had started receiving intravenous heparin after admission. In all patients colour coded duplex sonography and venography were performed

within 24 hours. Sonography was performed with a 5 MHz phased array transducer. The femoral and popliteal veins were examined with the patient in a supine position. The calf veins were not investigated.

We assessed the compressibility of the vein by pressing the transducer on it in a transverse section; the phasicity of flow during deep inspiration and expiration; and whether there was an echogenic thrombus. Five patients underwent both procedures on both legs. Sonography and venography were performed and the results interpreted independently by different investigators in the cardiovascular and radiology units respectively. For sonography the diagnostic criteria for deep vein thrombosis were incompressibility of the vein, absence of flow phasicity, and presence of an echogenic thrombus. Venography was performed and interpreted according to Rabinov and Paulin.[4]

The table gives the results. In addition, eight patients were diagnosed as having isolated calf vein thrombosis on venography. In one of these there was absent flow phasicity in the popliteal vein, but in the remaining seven the diagnosis could not be made on sonography.

Comment

As deep vein thrombosis cannot be diagnosed accurately by clinical examination alone and venography is invasive and sometimes contraindicated a reliable non-invasive method is needed to confirm the diagnosis and indicate treatment with oral anticoagulant or even thrombolytic drugs. A recently developed technique, colour coded duplex sonography,

Comparison of results of colour coded duplex sonography and venography in patients with suspected femoropopliteal vein thrombosis and sensitivity, specificity, and positive and negative predictive values of colour coded duplex sonography (95% confidence intervals)

		Colour coded duplex sonography								
		Vein incompressibility			Absence of flow phasicity			Visualisation of thrombus		
		Positive	Negative	Total	Positive	Negative	Total	Positive	Negative	Total
Venography	Positive	54	1	55	52	3	55	48	7	55
	Negative		39	39		39	39		39	39
	Total	54	40	94	52	42	94	48	46	94
Sensitivity		98% (90 to 100%)			95% (85 to 99%)			87% (76 to 95%)		
Specificity		100% (91 to 100%)			100% (91 to 100%)			100% (91 to 100%)		
Positive predictive value		100% (93 to 100%)			100% (93 to 100%)			100% (93 to 100%)		
Negative predictive value		98% (87 to 100%)			93% (81 to 99%)			85% (71 to 94%)		

offers simultaneous visualisation of real time B-mode images and flow by pulsed colour coded Doppler sonography.

In our study the best diagnostic criterion was incompressibility. The only false negative result was during the early phase of the study in a patient with a thrombus limited to the adductor canal. Since this case no further isolated adductor canal thrombosis has been missed by accurate examination of this region. This confirms other reports that the assessment of vein incompressibility is the most reliable criterion for deep vein thrombosis.[5]

Colour coded visualisation of venous flow has considerable diagnostic advantages in that it more successfully detects a non-occlusive free floating thrombus with visible flow around it, which is known to be a high risk for thromboembolism. Moreover, a fresh hypoechogenic thrombus may be misinterpreted by conventional duplex sonography. Another advantage is the quick and reliable identification of vascular structures, especially in the popliteal fossa, where accessory veins are not easily distinguishable from other structures. Colour coded duplex sonography can be performed at the bedside, is time sparing, and permits diagnosis of other abnormalities that mimic deep vein thrombosis—for example, haematoma, Baker's cyst, and neoplasm.

We conclude that colour coded duplex sonography is a highly accurate, simple, non-invasive method for detecting femoropopliteal thrombosis. Additional venography is not necessary. Its value in diagnosing isolated calf vein thrombosis remains to be established.

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Are falls from supermarket trolleys preventable?

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Children are commonly transported around supermarkets in the seat of a supermarket trolley. Usually no restraint is fitted, making it easy for a child to stand up. We report a series of falls from such trolleys and discuss some preventive measures.

Patients, methods, and results

All children presenting to this department after a fall from a supermarket trolley were prospectively recorded over six months. During this time 8215 children attended the department, 10 of whom had fallen out of a trolley and injured their head. The details of their injuries are shown in the table. None of the children had been restrained. Their mean age was 24 months (range 9-50 months). Three children were admitted to hospital, one of whom had sustained an occipital fracture.

Details of children with head injuries who fell from supermarket trolleys

Child	Sex	Age (months)	Loss of consciousness	Skull fracture	Outcome
1	F	18	No	No	Discharged with instructions about head injuries
2	F	13	No	No	Discharged with instructions about head injuries
3	F	9·5	No	No	Discharged with instructions about head injuries
4	F	42	No	No	Discharged with instructions about head injuries
5	M	23	No	No	Discharged with instructions about head injuries
6	M	13	No	No	Discharged with instructions about head injuries
7	M	40	No	No	Discharged with instructions about head injuries
8	M	9	Yes	No	Observed for 8 hours
9	F	20	Yes	No	Observed for 24 hours
10	F	50	No	Yes	Observed for 24 hours

To identify preventive measures we went to six supermarkets chosen at random. Details of 50 consecutive children placed in a trolley in each supermarket were recorded. Of these 300 children, only six were restrained with a child harness. None of the trolleys was fitted with a restraining device.

Comment

We believe that we are the first group to report this type of injury. The fact that all the children in this study received a head injury shows the ease with which children fall head first. Despite the small number of children a third were admitted to hospital but none had appreciable intracranial abnormality. Few of the other mechanisms of injury gave such a high admission rate. These children, however, represent a group in whom the accident is easily preventable.

Using child restraints and harnesses has become "outdated," but we believe that they could help to reduce this type of fall. During our study we became aware of a recently developed restraint designed to prevent such accidents.[1] We recommend that all supermarkets that provide trolleys should be encouraged to provide the means to restrain a child within the trolley to help to reduce the incidence of this type of accident. Parents should be made aware of the benefits of using a restraint or harness and be encouraged to use these. We recommend that advice on child restraints should be included in all publications on prevention of accidents in children. Child surveillance programmes in general practice should also include such advice.

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