

Spider naevi

Introduction

The spider naevus, also referred to as spider angioma or spider telangiectasia, is a vascular lesion best known for its association with liver disease. The characteristic lesion was first described in 1869 by the English physician Erasmus Wilson (Reuben, 2002), and studied extensively during the 20th century by the hepatologist William Bean, who disputed the supposed restriction of its distribution to the areas drained by the superior vena cava (Khasnis and Gokula, 2002).

Figures suggest that 10–15% of healthy adults develop spider naevi, and although traditional teaching suggests that having five spiders is a predictor of underlying disease, more than this may be seen in healthy children (Rapini, 2010).

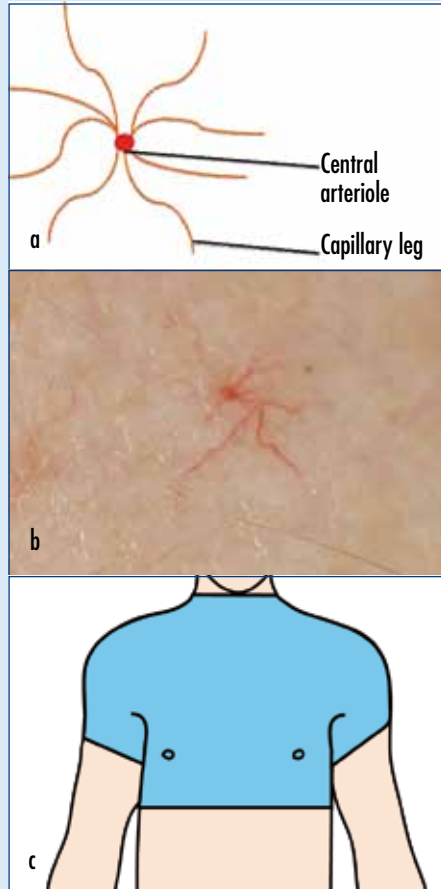
Characteristic appearance and distribution

Spider naevi are typically 5–10 mm in size, seen as a central arteriole with thin-walled capillary ‘legs’ radiating out from the body (Figure 1). Characteristically they drain on pressure, and the capillaries can be seen to fill from the central arteriole. They are found most commonly on the face, arms, head and neck, but can also be seen on the mucous membranes of the mouth, nose and pharynx (Khasnis and Gokula, 2002). Multiple spider naevi are associated with the appearance of numerous small vessels scattered on the skin of the upper arms, known as ‘paper money skin’. The presence of spider naevi requires active blood flow, and spiders can be seen to fade in

the context of hypotension and on death (Higgins and du Vivier, 1992).

Bean (1945) published a series of 91 patients, with a collective total of more

Figure 1. a. Anatomical features of a spider naevus. b. Photograph of a spider naevus on the chest of a patient with chronic liver disease. c. Typical anatomical distribution of spider naevi.



than 1700 spider naevi, of which less than 0.1% were located in the lower half of the body. This is thought to be a result of the lower vascular resistance in the forearm, compared to that in the calf (Higgins and du Vivier, 1992). White spots seen on the arms and buttocks after cooling may represent the early stages of a spider naevus (Khasnis and Gokula, 2002). The differential diagnoses of spider naevi are summarized in Table 1.

Pathogenesis and disease associations

Spider naevi are commonly seen in chronic liver disease of all causes, but are also associated with pregnancy, oral contraceptive use and thyroid disease. There are a number of mechanisms by which spider naevi may develop, and there is ongoing debate about whether spider naevi develop secondary to dilation of pre-existing vessels, or arise de novo through angiogenesis (Li et al, 1998).

The ‘oestrogen effect’

High oestrogen states have been hypothesized to account for vasodilation of the central arteriole, and indeed resolution of spider naevi can be seen in the months following delivery, or on ceasing oral contraceptive use (Khasnis and Gokula, 2002). In addition, the presence of spider naevi in male cirrhotics has been found to correlate with an increased serum oestradiol to free testosterone ratio (Pirovino et al, 1988).

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Table 1. Differential diagnosis of spider naevi and differentiating features

Differential diagnosis	Differentiation from spider naevi
Acneiform eruptions	Clusters of papules and pustules, comedones may be visible
Angioma serpiginosum	Clusters of small red puncta in a linear array
Basal cell carcinoma	Rolled pearly edges, often occurring on the face
Cherry haemangioma (Campbell de Morgan spot)	Red papule, no radiating ‘legs’
Generalized essential telangiectasia	Diffuse, widespread
Insect bites	Itchy red weal, resolve rapidly
Osler–Weber–Rendu	Affects lips, systemic involvement
Rosacea	Typically affects face, exacerbations of flushing with alcohol and spicy food

Direct vasodilatation by alcohol

Spider naevi are more prevalent in patients with alcoholic cirrhosis than cirrhosis of viral or cryptogenic origin (Strauss et al, 1990; Li et al, 1999), which may be explained by the ability of alcohol to act as a potent vasodilator (Li et al, 1998).

Substance P

Li et al (1998) found that non-alcoholic cirrhotic patients with greater numbers of spider naevi had higher levels of substance P, a vasoactive peptide secreted by peripheral nerves and endothelial cells. Substance P is usually inactivated by the liver. Decreased metabolism and increased secretion into the splanchnic circulation may account for these higher circulating levels, but it is unknown whether substance P leads to formation of spider naevi either through angiogenesis, or by direct vasodilatation of the central arteriole.

Growth factors

Serum levels of vascular endothelial growth factor and basic fibroblastic growth factor are raised in cirrhotics (Li et al, 2003), and are thought to play a role in development of spider naevi through neovascularization. Vascular endothelial growth factor levels were found to be higher in patients with cirrhosis of alcoholic aetiology, and high levels were strongly associated with the presence of larger spider naevi.

Clinical approach to the patient with spider naevi

Figure 2 shows the clinical approach to the patient presenting with multiple spider naevi.

Spider naevi in liver disease

Evidence suggests that the number of spider naevi can be useful in predicting both the severity of liver disease and the risk of complications. Niederau et al (2008) graded the severity of liver fibrosis from one to four based on ultrasound imaging, with four representing cirrhosis. They found an increase in the number of spider naevi seen as the liver became progressively more fibrotic, with 84% of cirrhotics exhibiting spider naevi compared with only 1% of patients with stage one fibrosis. Similarly, an increase in spider naevi frequency has been demonstrated with increasing Child–Pugh class (Li et al,

1998). Furthermore, cirrhotic patients with spider naevi have higher bilirubin levels and a longer prothrombin time (Li et al, 1999), and the lesions can disappear when hepatic function improves (Khasnis and Gokula, 2002).

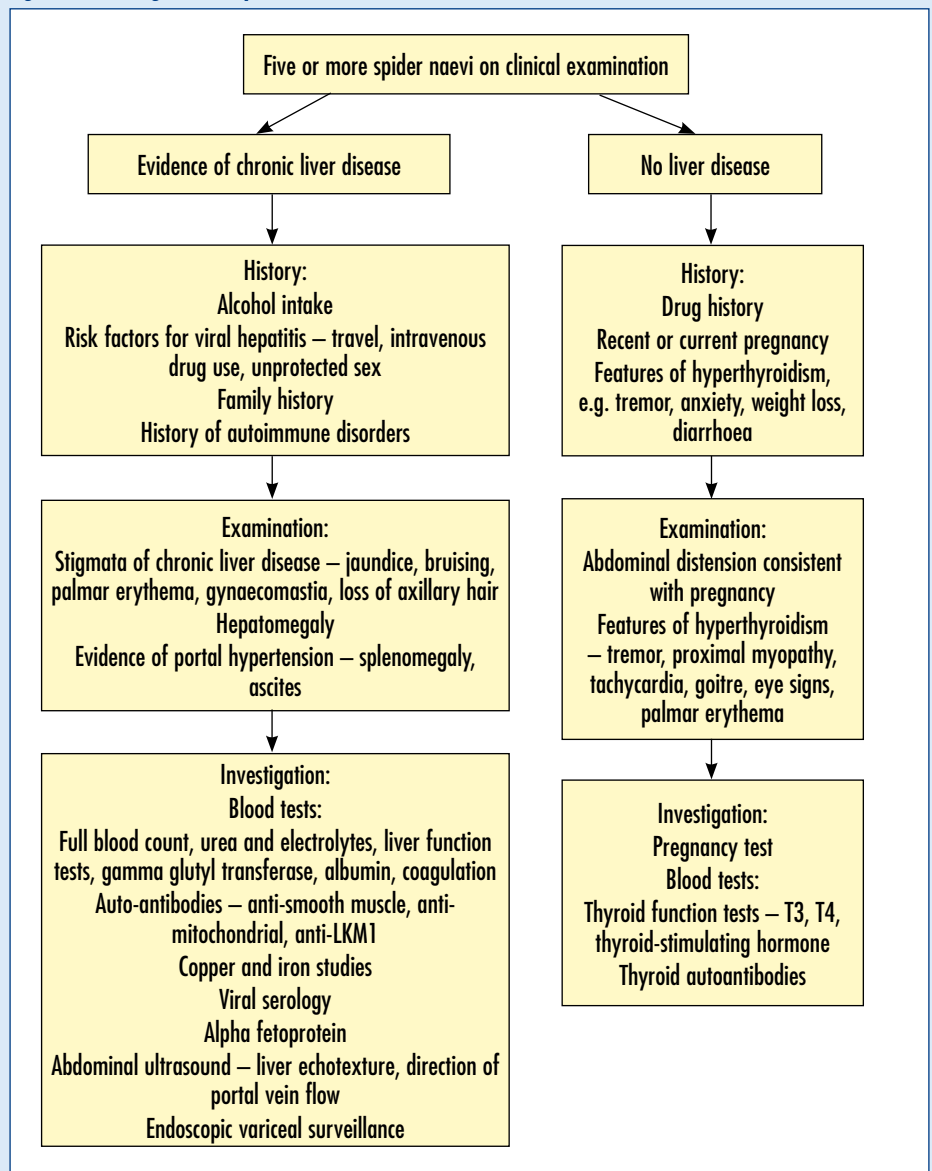
The presence of spider naevi in itself is not usually associated with any complication, although minor trauma may lead to profuse bleeding. However, some studies have shown that the size and distribution of spider naevi are good predictors of the risk of future bleeding from varices (Foutch et al, 1988; Higgins and du Vivier, 1992), with a bleeding risk of greater than 50% in patients with more than 20 spider naevi, and of over 60% if spiders are found at atypical sites, for example on the lower

limbs. Large spider naevi were most strongly correlated with variceal haemorrhage, with a bleeding risk of more than 80% in patients with spiders greater than 15 mm in diameter. Arterial malformations termed ‘pleural spiders’ have also been demonstrated in the peripheral branch of the pulmonary artery in patients who had died of liver cirrhosis, which could underlie the risk of developing hepatopulmonary syndrome in end-stage liver disease (Berthelot et al, 1966).

Treatment

The management of spider naevi involves treating the underlying condition. Direct treatment of the naevi is not usually clinically indicated, but may be requested for

Figure 2. Investigation of spider naevi.



cosmetic reasons. This typically involves electro-dessication or laser treatment (Ross et al, 1997), but lesions can recur. **BJHM**

Conflict of interest: none.

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KEY POINTS

- Spider naevi are easily identified and their association with liver disease is well known, but they can be an indicator of hyperthyroid and high oestrogen states.
- The presence of spider naevi in patients with liver disease can be an important clinical predictor of longstanding disease and poor prognosis.
- The presence of a large number of spider naevi, or lesions in unusual locations, warrants further investigation.

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