Review Article: Post-Spinal Cord Injury Syringomyelia

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The incidence of post-traumatic syringomyelia ranges between 0.3 and 3.2%, dependent on the authors, with a mean of about 1.3%.^{2, 7, 25, 27, 29, 33, 41, 42}

The interval between spinal trauma and the appearance of neurological symptoms varies from 2 months to 36 years.^{2, 7, 8, 29} Post-traumatic syringomyelia occurs at the same frequency in patients with complete and in those with incomplete lesions, and there is no relation with the intensity of the initial trauma. It occurs more often with thoracic and lumbar lesions than in patients with cervical lesions,^{5, 12, 28} and has also been described in relation to extramedullary tumours,^{1, 4} tuberculous meningitis,³² arachnoiditis²⁹ and after cervical trauma with no evident initial neurological impairment.^{16, 24} It may be associated with arachnoid cysts.¹ Extension of the cavity may be above or below the level of lesion.

Pathogenic factors are still discussed. Different theories have been proposed to explain the mechanism of the initial cavitation: vascular lesions remote from the initial lesion;^{18, 23, 43} the role of ischaemia in producing microinfarcts;^{19, 34, 43} the role of excessive mobilisation of the cervical cord;^{2, 18} the action of cellular enzymes and particularly of lysosomes;¹⁷ liquefaction of a haematoma;^{7, 19, 43} haemorrhage necrosis of the cord;²⁰ and the possible role of oedema⁹ or ischaemia secondary to local arachnoiditis.^{32, 33}

The mechanism of extension of the cavity seems to be mainly related to pressure changes in the venous system, by the action of intraspinal veins on cerebral spinal fluid pressure.^{43, 44} The fixation of the spinal cord by adhesions and arachnoiditis at the site of the lesion also appears to play a role.^{4, 19}

The first symptom in most cases is pain, which is increased by straining, coughing or sneezing,^{7, 27, 41} followed by sensory deficit, motor loss and increase of spasticity.²⁹ Autonomous symptoms such as abnormal sweating or hypertension are less frequent,²⁹ but can also be the first symptom.³⁷ The earliest clinical sign is loss of reflexes.^{7, 42}

Diagnostic techniques have undergone an important evolution in recent years. Oil and gas myelography being replaced by metrizamide myelography associated with CT scan imaging. The recently developed MR imaging has now become the technique of choice.^{11, 36} Intra-operative sonography is used to detect septations

and small additional cysts.^{11, 14} Electrophysiological studies showed an increase of latency of F-wave and a decrease of the number of motor units with increase of amplitude and duration.^{6, 8, 29}

Treatment of post-traumatic syringomyelia is discussed and no definitive indication can be put forward. The natural evolution is unforeseeable, and stabilisation of symptoms for many years and in some patients even spontaneous improvement have been described. On the other hand, it is impossible to give a prognosis for the results of surgical treatment.^{3, 7, 18, 38, 41} Some surgeons only operate on patients who are deteriorating,²⁶ others consider motor deficit or intractable pain to be an indication for surgery,²⁹ or consider that only large cysts will respond to surgery.¹¹ Different surgical techniques have been utilised in order to reduce pressure inside the cyst: medullary transection, aspiration of fluid content (which gave no lasting effect), local syringostomy and syrinx drainage, either syringosubarachnoid by Y or T tubes or syringoperitoneal with or without valve.^{7, 13, 19, 20, 22, 26, 35} The superiority of one of these techniques is controversial.

In most patients, surgery results in stabilization or improvement of the symptoms, only a few patients have been made worse.

The best effects are the relief of pain^{5, 35} and reducing motor deficit; but there is poor effect on sensory disturbances and nearly no effect on spasticity or on dysaesthetic pain. One author reports a loss of the benefits of surgery after a few months or years.²⁶

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