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FACT SHEET

Sympathetic Nerve Block

Sympathetic nerve blocks are used to treat neuropathic pain associated with symptoms caused by reversible changes in the size of peripheral blood vessels.

These injection techniques are sometimes used when other conservative measures, such as physical therapies and medication, don't work.

WHAT ARE SYMPATHETIC NERVES?

The sympathetic nerves run on the front surface of the spinal column (not in the spinal canal with the nerves from your central nervous system). The sympathetic nerves are part of the autonomic nervous system, which basically controls functions like blood flow to the extremities, sweating, heart rate, digestion, blood pressure, goose bumps, and many other functions.

In other words, the autonomic nervous system is responsible for controlling things you don't think about or have direct control over. However, there is a connection between the central and autonomic nervous systems. Sometimes arm or leg pain is caused by a malfunction of the autonomic system, secondary to an injury.

WHAT IS A SYMPATHETIC NERVE BLOCK AND WHY IS IT HELPFUL?

A nerve block is an injection of local anaesthetic (with or without other medication) onto a nerve. This can temporarily relieve symptoms, and sometimes relieve them long term. A sympathetic nerve block involves injecting this material around the sympathetic nerves.

If the initial block is successful in relieving pain for longer than the duration of the local anaesthetic (which generally helps for only a few hours), then additional blocks may be repeated in 7 -14 days, and again later if there is some success.

Sympathetic nerve blocks are designed to produce temporary or permanent interruption of activity in the sympathetic nervous system, particularly the efferent sympathetic pathways (efferent nerves transmit information from the central nervous system out to the muscles or glands). In some cases, blocks can temporarily or permanently interrupt activity of the accompanying afferent nerves (the nerves that carry information from the nerve receptors into the brain or spinal cord).

Alteration in sympathetic nervous system activity can be associated with, or be a cause of pain. It's often suspected when there are accompanying clinical features, suggesting that the sympathetic nervous system isn't working properly. This is indicated by changes in the blood vessel calibre in the arms and legs, and by the nature of pain. Changes in blood vessel calibre can produce symptoms such as:

- temperature changes (hot and/or cold) in the limbs
- colour changes (blue and/ or red) in the limbs
- increased sweating.

The pain is typically 'neuropathic' — a burning, stinging or shooting type of pain. It is commonly associated with frank nerve injury, in which case there may be abnormal sensations such as numbness.

TYPES OF SYMPATHETIC BLOCKS:

Initial sympathetic nerve blocks have a diagnostic, and potentially therapeutic component.
The diagnostic phase occurs during the temporary nerve blocking phase of the local anaesthetic.
This is determined by whether the injection relieves all, or some of the symptoms for the duration of the anaesthetic (usually a few hours).
If it does, then the symptoms relieved are said to be sympathetically mediated. However, as mentioned above, sometimes the injection can produce longer term effects (a therapeutic effect).

Usually the nerves are blocked where they form the sympathetic trunks and ganglia, or plexuses, in front of the vertebral column. Sympathetic nerves are most concentrated in these regions. The site of the block used depends on the region targeted.

VALIDITY OF THIS TREATMENT

The accuracy of a sympathetic block is confirmed by signs of alteration in the function of the blood vessels, particularly by 'venodilatation', which is:

- increase in capillary blood flow and perfusion
- increase in skin surface temperature (seen as long as the room temperature is low).

In the case of a stellate ganglion or sympathetic plexus block, a Homer's syndrome develops. This syndrome, which is temporary, is characterised by an increase in diameter of the eye pupil, and a drooping eyelid.

COMPLICATIONS

The risk of complications appears to be acceptably low.
The published case reports pertain largely to neurolytic blocks (the use of alcohol/ phenol rather than local anaesthetic). Systematically, the potential complications of sympathetic blocks include:

- the inadvertent puncture of adjacent structures
- injection of agents into adjacent structures
- spread of agents to other nerves
- fainting (postural hypotension)
- ejaculatory failure (short term).

For more information

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