POLYNEURITIS **MEDICAL APPENDIX**

(Polyneuropathy, Multiple neuritis, Multiple symmetrical peripheral neuritis)

DEFINITION

1. **Polyneuritis** (polyneuropathy) is a clinical syndrome of which the essential feature is the simultaneous impairment of function of many peripheral nerves. Sometimes cranial nerves may be involved.

2. Peripheral neuropathy may be divided into two broad categories depending on the distribution of the involvement:

    2.1 **Mononeuropathy** occurs when lesions involve isolated peripheral nerves or nerve roots. When multiple isolated lesions occur this is known as **multiple mononeuropathy**. The lesions of a widespread multiple mononeuropathy may summate to produce a symmetrical disturbance, but a careful history and examination may indicate the involvement of individual nerves.

    2.2 **Polyneuropathy** occurs when there are diffuse and bilaterally symmetrical lesions and disturbance of function.

CLINICAL MANIFESTATIONS

3. In mononeuropathies and multiple mononeuropathies the symptoms listed below are confined to the distribution of individual nerve or nerves involved.

4. **Muscle wasting and weakness**. In generalised symmetrical peripheral polyneuropathies this is commonly peripheral in distribution with its onset in the lower limbs, resulting in bilateral foot drop. Involvement of the upper limbs begins with weakness and wasting of the small hand muscles and usually weakness of the fingers and wrists before the forearm flexor muscles are involved. At times a symmetrical involvement of the proximal musculature in the limbs occurs (eg. Guillan-Barre syndrome or porphyric neuropathy).

5. **Fasciculation** due to spontaneous contraction of isolated motor units is usually a feature of anterior horn cell disease but may be encountered in peripheral neuropathies, as may **muscle cramps**. A rare manifestation of peripheral neuropathy is the occurrence of continuous repetitive discharges in motor nerve fibres leading to generalised muscular rigidity or **neurotonia**.

6. **Loss of tendon reflexes** is a frequent accompaniment of a peripheral neuropathy, and usually first affects the ankle jerks.

7. **Sensory symptoms and sensory loss** in symmetrical polyneuropathies are usually distal in distribution, giving rise to a “glove and stocking” pattern of involvement. All modalities of sensory loss may be involved or there may be restriction to certain forms of sensation.

8. **Trophic changes** may complicate peripheral neuropathies.

9. **Paraesthesiae** are frequent features in peripheral neuropathy.

10. An unusual feature encountered most often in uraemic polyneuropathy is “restless legs”.

11. **Spontaneous pains** of an aching or lancing character may complicate a number of generalised polyneuropathies. **Causalgia** constitutes a particularly troublesome painful syndrome.

12. **Disturbances of automatic function** are occasionally the salient abnormality in a peripheral neuropathy.

AETIOLOGY

13. Isolated and multiple isolated peripheral nerve lesions arise from conditions that produce localised damage, such as mechanical injury, nerve entrapment, thermal electrical or radiation injury, vascular causes, granulomatous, neoplastic or other infiltrations and nerve tumours.

14. Polyneuropathy may be caused by a large number of factors including the following:

Toxic substances

15. **Metals**: including antimony, arsenic, bismuth, copper, lead, mercury (pink disease, Manimata disease), phosphorus, thallium.

16. **Drugs, organic chemicals, and other toxic substances**: including acryl-amide, amiodarone, aniline, BHMH, buckthorn (coyotillo fruit), “bush tea”, calcium carbamide, carbamazepine, carbon monoxide, carbon disulphide, carbon tetrachloride, chloral, chloretone, chloroquine, clioquinol, cyanogenetic glycosides, cytotoxic agents including vincristine sulphate, dapsone, DDT, dinitrobenzol, disulfiram, emetine, ethionamide, ethylene oxide, glutethimide, hydrallazine, hexachlorophane, immune sera, indomethacin, isoniazid, methaqualone, metronidazole, misonidasole, n-hexane, nitrofurantoin, parathion, pentachlorophenol, perhexiline, phenytoin, stilbamidine, streptomycin, sulphanilamide, and its compounds, sulphonal, tetrachlorethane, thalidomide, trichloroethylene, triorthocresylphosphate (ginger paralysis and apidol paralysis).

Deficiency disorders

17. Beri-beri, chronic alcoholism, chronic obstructive pulmonary disease, famine oedema, folic acid deficiency, liver disease and chronic disease of (including coeliac disease), or operations upon, the gastrointestinal tract, pellagra, pregnancy, protein-calorie malnutrition, tropical neuropathy, vitamin B12 neuropathy.

Metabolic disorders

18. Acromegaly, diabetes, hyperinsulinism, porphyria, uraemia, beta-lipoproteinaemia, dysglobulinaemia, monoclonal gammopathy and various paraproteinaemias.

Haematological disorders

19. Polycythemia vera, leukaemia, multiple myeloma, and haemorrhagic disorders.

Infective conditions

20. **Local infection of nerves** including brucellosis, leprosy, leptospirosis, infective mononucleosis and, very rarely, syphilis.

21. Polyneuritis complicating **acute or chronic infections** including dysentery, focal infection, gonorrhoea, influenza, malaria, measles, meningitis, mumps, paratyphoid, puerperal sepsis, scarlet fever, septicaemia, smallpox, syphilis, tuberculosis, typhoid and typhus.

22. Infections with organisms whose **expotoxins** have an affinity for the peripheral nerves including diphtheria, dysentery and tetanus.

Post-infective (? Allergic) polyneuropathy

23. Conditions is this group include acute post-infective polyradiculoneuropathy (the Guillain-Barre syndrome), some cases of acute and subacute polyneuropathy and recurrent polyneuropathy.

Trauma

24. Physical injury and nerve entrapment due to direct trauma, electric shock, cold and radiation injury.

Ischaemic neuropathies

25. Neuropathies due to ischaemia or infarction of peripheral nerves as in peripheral vascular disease.

Connective tissue and allied disorders

26. Giant-cell arteritis, polyarteritis nodosa, rheumatoid polyneuritis, sarcoidosis, systemic lupus erythematosus, systemic sclerosis, other vascular neuropathies including peripheral vascular disease.

Genetically determined polyneuropathy

27. Peroneal muscular atrophy, the Roussy-Levy syndrome, progressive hypertrophic polyneuritis of Dejerine and Sottas, Refersum's disease, hereditary neuropathy with liability to pressure palsies, neuropathy in metachromic leukodystrophy, in the Krabbe form of diffuse sclerosis and in the other leukodystrophies and storage disorders, in primary amyloidosis, in porphyria, in Fabry's disease, in A-alpha and beta-lipoproteinaemia and various other obscure varieties of hereditary neuropathy including neuropathic arthrogryposis multiplex congenita, so-called "globular neuropathy, giant axonal neuropathy, neuropathy with optic atrophy, nerve deafness and/or paraproteinaemia.

Polyneuropathy of obscure origin

28. These include recurrent polyneuritis, chronic progressive polyneuritis, carcinomatous neuropathy and the other paraneoplastic neuropathies, congenital hypomyelination neuropathy and neuropathies of undetermined cause.

CONCLUSION

29. **Polyneuritis** is a condition in which there is impairment of function of peripheral nerves. There are many causes which are listed above.

REFERENCES

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