

Occupational Neurologic Disease

Dr Omid Aminian

Occupational Neurologic Disease

- **Mechanical injuries**

Occupational entrapment neuropathies

- **Chemical neuropathies**

CNS

(most common syndrome is encephalopathy)

PNS

(The most non specific syndrome is a distal symmetrical sensorimotor polyneuropathy)

Occupational Entrapment Neuropathies

SYNDROME	ENTRAPMENT SITE	OCCUPATIONAL PREDISPOSITION
Carpal tunnel syndrome	Carpal tunnel	Repetitive forceful finger flexion Wrist movement
Ulnar neuropathy at elbow	Cubital tunnel	Elbow flexion Repetitive elbow motion Leaning on elbow
Thoracic outlet syndrome	Cervical rib or fibrous band compressing lower trunk of brachial plexus	Carrying heavy object Sustained arm raising above shoulder

General principle of neurotoxicology

- A clear dose-toxicity relationship exist in the majority of neurotoxic exposure
- Toxin typically cause a nonfocal or symmetrical neurologic syndromes
- There is usually a strong temporal relationship between exposure and the onset of symptom
- Some recovery is typically possible after removal of the insulting agent
- Multiple neurologic syndromes are possible

Neurologic Symptom&Signs

<i>SYNDROME</i>	<i>EXAMPLE</i>
Acute encephalopathy	Solvents & many toxins
Chronic encephalopathy	Solvents & many toxins
parkinsonism	Mangnanese –methanol-CO
Motor neuron disease	Lead-manganese
myeloneuropathy	Nitrous oxide-- n-hexane
pollyneuropathy	Metals & many toxins

Neurotoxins

- Most common peripheral neurotoxins
 - OP pesticides
 - carbamates
 - CS₂
 - mercury
 - lead
 - arsenic
 - antimony and acrylamide

Neurotoxins

- **Most common CNS neurotoxins**
 - arsenic, lead (epilepsy)
 - manganese (Parkinson's)
 - mercury
 - CS₂
 - Chlorinated hydrocarbons
 - CO
 - benzene, toluene, xylene

Neurotoxins

- Parkinson's
 - manganese
 - CO
 - CS₂
 - MPTP n-methyl-4 phenyltetrahydropyridine

Toxic Polyneuropathies

- **Mostly sensory neuropathy**

Acrylamide

Arsenic - mercury - thallium

Carbon disulfide - ethylene oxide

- **Predominantly motor neuropathy**

Lead

N-hexane – organophosphate

- **Cranial neuropathy**

Trichloroethylene

thallium

Approach to occupational neuropathies

1. Occupational history
2. Physical examination
3. Paraclinic tests (EMG, NCV,.....)
4. Consultant with neurologist
5. Rule out non occupational neuropathies
6. Avoidance of exposure