Botulism Following Botulinum Toxin Injection

Introduction

Pharmaceutical grade botulinum toxin type A or B (though B is not registered in HK) is being used for cosmetic and therapeutic purposes. It is produced from culture of Clostridium Botulinum.

Botulinum toxin (BTX) irreversibly blocks the release of acetylcholine from presynaptic neurons and prevents nerve impulse transmission. It acts at neuromuscular junctions, autonomic ganglia and parasympathetic nerve terminals.

Adverse drug reactions (ADR) and toxicity of overdose

Onset of adverse drug reactions (ADR) after therapeutic dose use is expected to be delayed for 2-3 days after injection.

Common BTX adverse effects

Commonly reported (1-10%) adverse effects after therapeutic dose use include: fatigue, influenza-like-illness and headache. The following adverse effects which are localized to the site of injection could also occur: eyes discomfort, ptosis, eyelid oedema, increased or decreased lacrimation, blurred vision, injection site pain / bruising / swelling / reddening, muscles pain, muscle twitching, muscle weakness adjacent to the area of injection, dysphagia, dysphonia, gait disturbance, diarrhoea, urinary incontinence.

Rare and life-threatening BTX adverse effect / toxicity

Spreads of BTX beyond the site of local injection (botulism) have been very rarely reported in causing generalized weakness, dysphagia, aspiration pneumonia, flaccid paralysis, respiratory muscle paralysis, autonomic neuropathy etc. In rare occasion after receiving massive BTX dose, patient can present with botulism 1-2 days after exposure.

Botulism classically presented with progressive descending symmetrical flaccid paralysis, starting with dysphagia, dysphonia, ptosis and blurred vision, followed by respiratory muscles paralysis. Autonomic neuropathy may lead to postural hypotension, dry mouth and cardiovascular, gastrointestinal and urinary autonomic dysfunction. Mental state and sensory functions are preserved.

Diagnosis

BTX adverse effects and toxicity is mainly a clinical diagnosis. Monitor bedside spirometry (e.g.: peak expiratory flow rate) and blood gas in severe cases. Nerve conduction study in patient with botulism

typically shows reduced motor potentials amplitude with normal conduction velocity and normal sensory potentials.

Management

In contrast to other forms of botulism (foodborne, infant, wound or inhalation botulisms), the mainstay management of botulism following botulinum toxin injection is supportive. Monitor for weakness progression and respiratory failure. Severe cases may require intubation and mechanical ventilation.

Botulinum antitoxin cannot reverse established muscle weakness. It is generally NOT indicated in cases presented with common BTX adverse effects.

In rare incidents of severe poisoning presented with progressive generalized weakness, swallowing and breathing difficulty, the use of antitoxin should be considered. Please contact Hong Kong Poison Information Centre (Tel: 2772 2211) or Prince of Wales Hospital Poison Treatment Centre (Tel: 2632 6209) for management advice.

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