Exocytosis of acetylcholine – 125 vesicles/AP.

Acetyl cholinesterase

Acetate

Choline

Reabsorbed into NT

Vesicles reformation

Coated pits - Clathrin

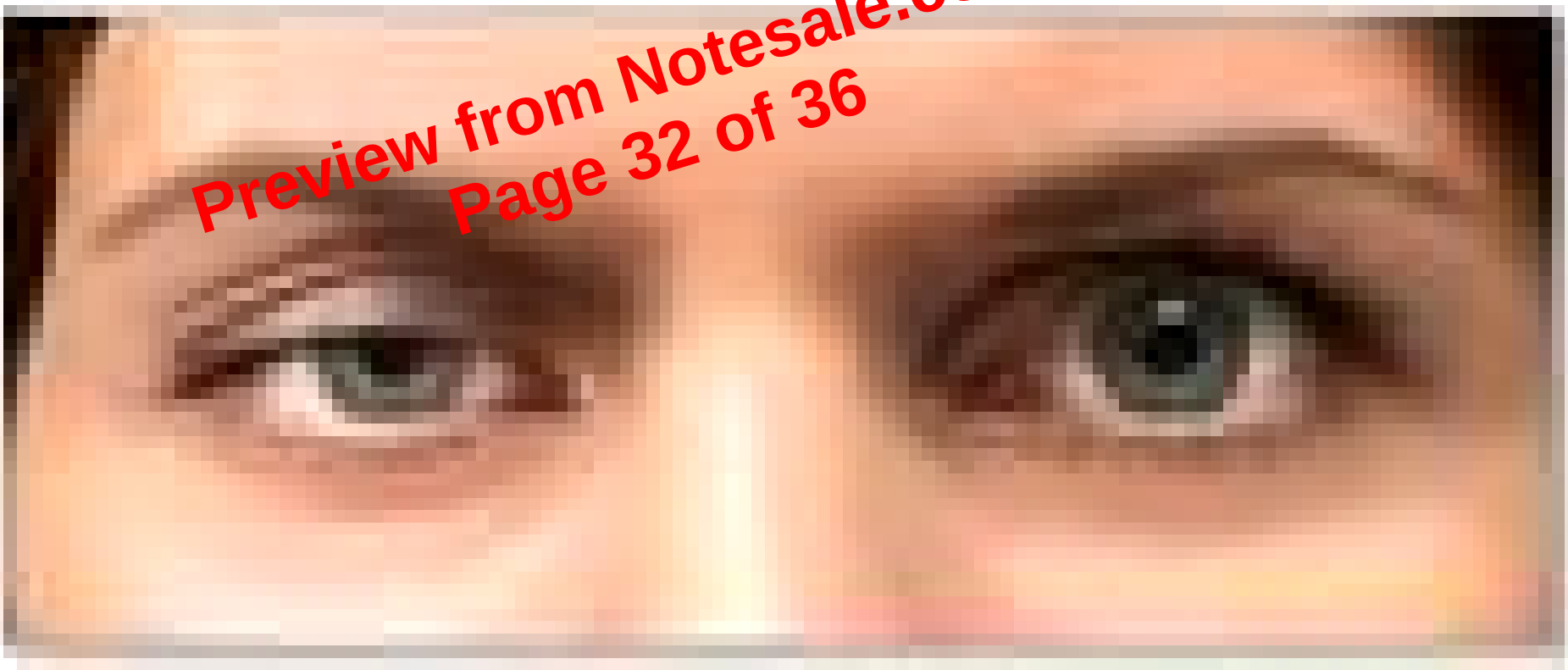
New vesicles

ACETYLCHOLINE IN SYNAPTIC CLEFT

Safety Factor for Transmission at the Neuromuscular Junction; Fatigue of the Junction

- Each impulse causes about three times as much end plate potential as that required to stimulate the muscle fiber.
- **Normal neuromuscular junction is said to have a high *safety factor*.**
- Stimulation greater than 100 times per second for several minutes
- Diminishes the number of acetylcholine vesicles so much that impulses fail to pass into the muscle fiber.
- This is called ***fatigue* of the neuromuscular junction**

PTOSIS



Myasthenic patient

Clinical presentation

- **Progression of disease**
  - Mild to more severe over weeks to months
    - Usually spreads from ocular to facial to bulbar to truncal and limb muscles
    - Often, symptoms may remain limited to EOM and eyelid muscles for years
- **Remissions**
  - Spontaneous remissions rare
  - Most remissions with treatment occur within the first three years

Clinical presentation

- Co-existing autoimmune diseases
  - Hyperthyroidism
    - Occurs in 10-15% MG patients
  - Rheumatoid arthritis
  - Scleroderma
  - Lupus

Management of Myasthenia gravis

- Anticholinesterases
- Immunosuppressive therapy
- Plasma exchange
- Immunoglobulins
- Thymectomy