

TRAUMATIC OPTIC NEUROPATHY (TON): When? How?

Mono and/or combined therapy?

Traditional and/or surgical treatment for TON?

*Judit Somlai**, *György Szeifert***, *Tamás Kassai****, *János Vajda*****

* Head, Unit of Neuro-Ophthalmology, Dpt. of Neurology & Stroke, Military Hospital, Budapest, Hungary

** Head, Department of Neuro-Traumatology, Péterfy Traumatology Centre, Budapest, Hungary

*** Head, Department of Child-Traumatology, Péterfy Traumatology Centre, Budapest, Hungary

****Head, Department of Neurosurgery, National Institute of Clinical neuroscience, Budapest, Hungary

INTRODUCTION

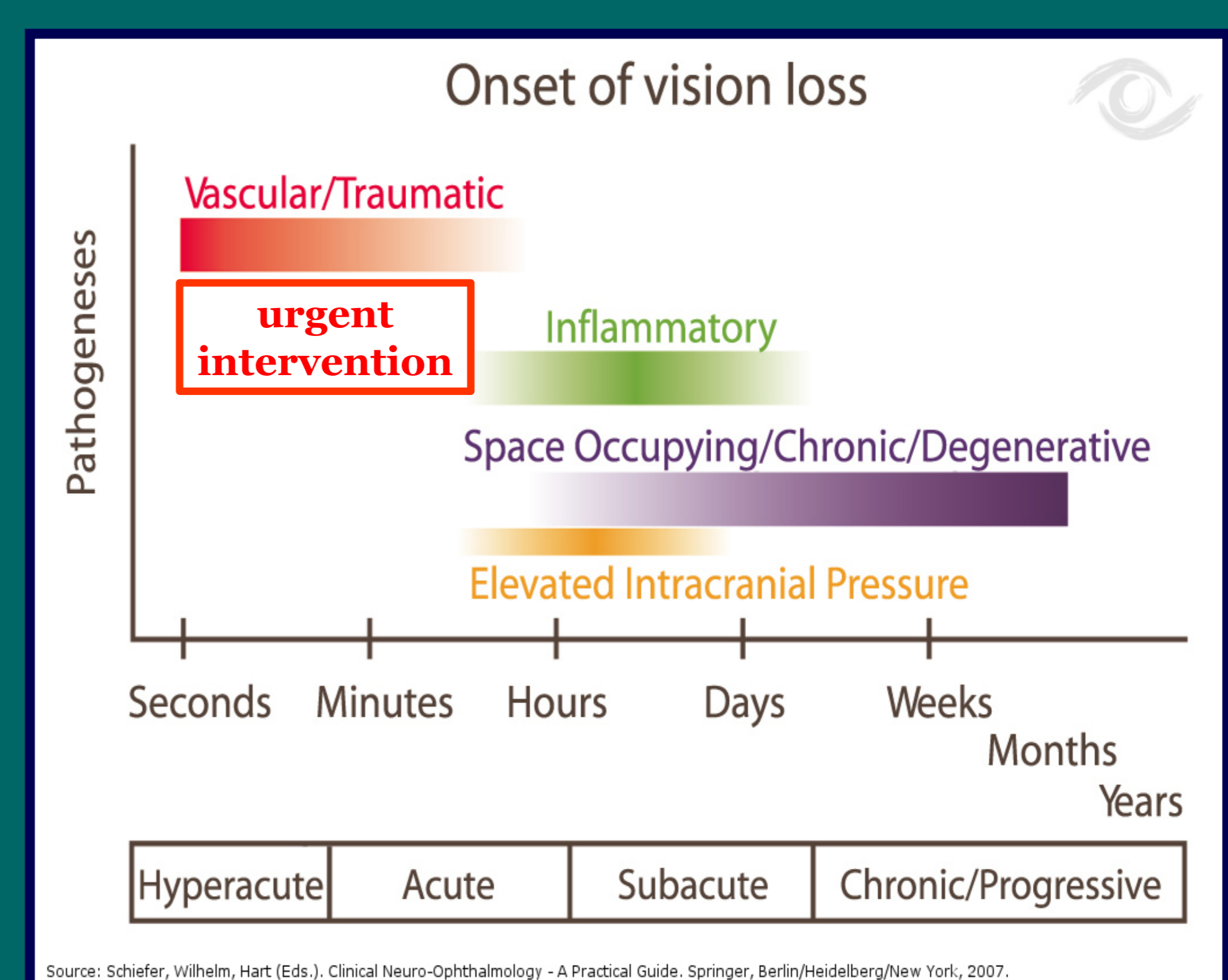
Time factor is extremely important in the efficiency of TON therapy:

- *by early diagnosis of ON lesion*
- *with consecutive neurological trauma*
- *as soon as it is possible* in cases of closed TON

Reasons for late recognition of closed - TON could be:

- *unconsciousness,*
- *respiratory and circulatory disorders,*
- *other neurological deficits,*
- *urgent neurosurgical and/or*
- *traumatological operations*

The importance of Time Factor



Source:

Schiefer, Wilhelm, Hart (Eds): Clinical neuroophthalmology – A practical guide. Springer, Berlin, Heidelberg, New York, 2007: Characteristic onsets and courses of neuro-ophthalmically relevant clinical syndromes

PATIENTS and METHODS

Closed CF +/- CLOSED TON	Open CF +/- OPEN TON
Closed Cranial Fracture (cl-CF) • without injury of head skin/galea • without of fracture of cranial bones	Open Cranial Fracture (o-CF) • desctructive lesions of hairy,skin, • galea , danger of infection
CLOSED TON (c-TON) • associates with closed CF • optic lesions injures without optic canal fractures • prevalence: about 0,5-5% of cl-CF • IF diagnosis comes late, THEN optic lesion remains hidden	OPEN TON (o-TON) • fractures to pieces of orbit walls dislocation • fractures of frontobasal part of cranium

Topography diagnosis

	VISUAL FIELD DEFECTS of ON				
ANTE-CHIASMAL ON lesion (one/two sides)	PRECHIASMAL-, CHIASMAL-, PARASELLAR regions lesions +/- eye movement disorders	TRACTUS-, RADIATION ON lesions	CORTICAL BLIND	OPTIC AGNOSIA Visual neglect, Dyslexia, dysgraphia +/- visual field defects	

RESULTS

COMPLEX treatment

- **steroid**
- **diuretic**
- **improvement of microcirculation**

DIURETIC effect	direct compression of fibers of the optic nerve decreased by diminished of edema
MICROCIRCULATION	metabolism of cells improved
INJURED microcirculation	improvement of cell-metabolism decreases of edema
NEUROPROTECTION effect	inhibition of lipoid peroxydation triggered by free radicals

THERAPY	of Cranial Trauma	of Traumatic Optic Neuropathy (TON)
CONSERVATIVE -by medicine (HIP & brain edema)	• diuretic • hyperosmotic solutions • hyperventillation - barbiturat • corticosteroid	steroid edema – to be decreased improv. of microcirculation
NEURO-SURGICAL	• impression fr.-remove of broken bone-fragments, fixation • cranial base fr. liquorrhoea : lumbal drainage basis reconstruction decompression of optic canal	exposure (acute phase) • intra-cranial • intra-canalicular • trans-ethmoidale
NEURO-INTERVENTION (operation)	ventricular drain – evacuation of hematoma craniectomy–decompression in malignant hypertension of ICP (>30 Hgmm)	traumatic injury to be treated according to the guideline
COMPLEX TREATMENT	There is no international guideline	N.Sarkies : Traumatic optic neuropathy Eye (2004) 18, 1122–1125 JA Muriello et al. Management of traumatic optic neuropathy – a study of 23 pts. Br J Ophthalmology 1992; 76: 349

CONSLUSIONS

- **extremely difficult to treat**
- **literature divided**
- **international guideline needed** (due to the complicated etio-pathomechanism)

1./ Too optimistic publications about therapies based on publishers' case reports without controls
non-evidence based studies

2./ Cold reception by the profession
requiring evidence based medicine

3./ Our team's attitude is in between
something should be done – as early as possible