Secondary damage after spinal cord injury and what to do about it

Antje Kroner, MD PhD

Department of Neurosurgery, MCW & Clement J. Zablocki, VAMC
Milwaukee, WI

MEDICAL COLLEGE OF WISCONSIN

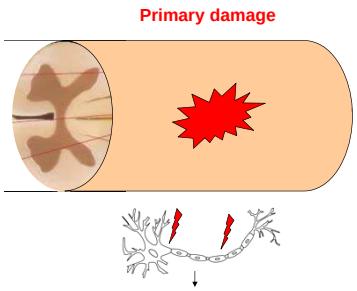
1. Spinal cord injury
2. Inflammation
3. Reducing secondary damage
4. Other research

MEDICAL COLLEGE OF WISCONSIN

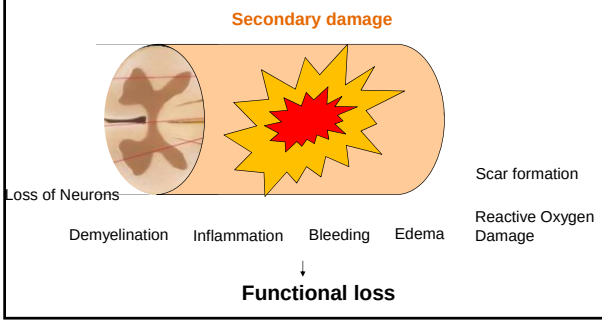
1. Spinal cord injury

MEDICAL COLLEGE OF WISCONSIN

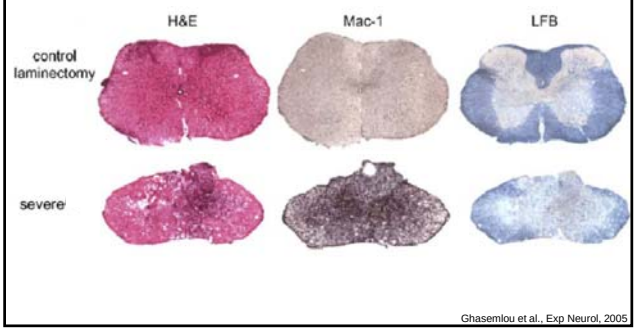
Traumatic SCI



Traumatic SCI



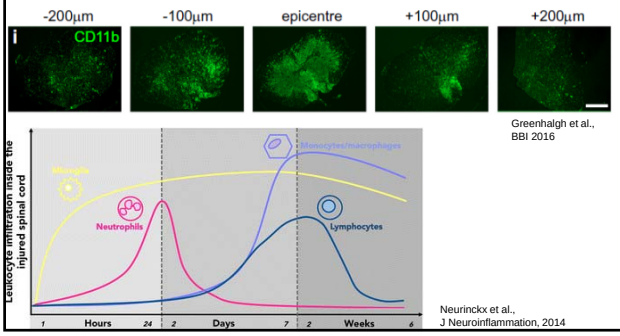
Histology



Ghasemlou et al., Exp Neurol, 2005

2. Inflammation

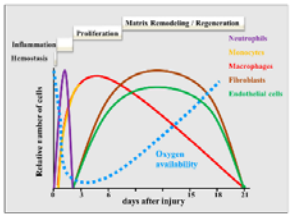
Inflammatory response



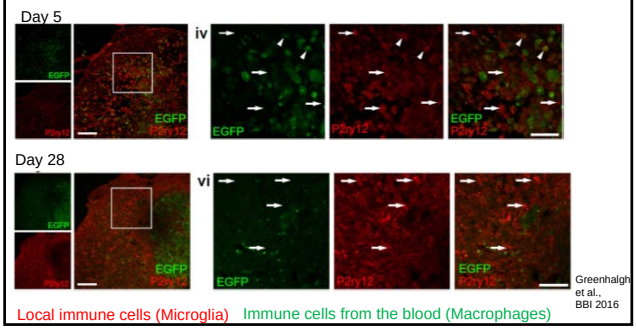
Greenhalgh et al., BBI 2016

Neurinckx et al., J Neuroinflammation, 2014

Inflammatory response (heart)



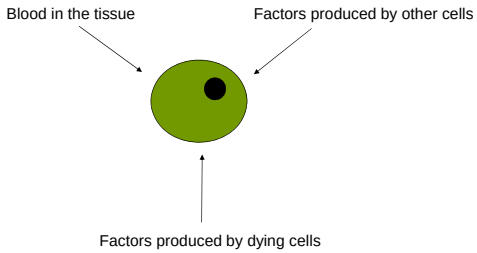
Inflammatory response (SCI)



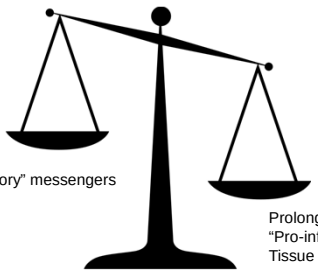
Greenhalgh et al., BBI 2016

Local immune cells (Microglia) Immune cells from the blood (Macrophages)

What makes cells “aggressive” ?



Inflammatory response (SCI)

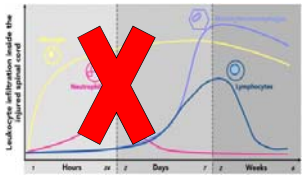


“Clean up”
“Anti-inflammatory” messengers
Tissue repair

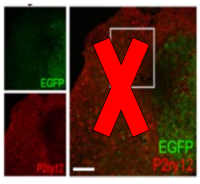
Prolonged inflammation
“Pro-inflammatory” messengers
Tissue damage

3. Reducing secondary damage

Blocking cells from entering



Making cells leave

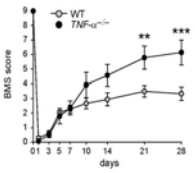


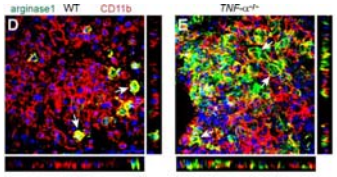
Reduce aggressive messengers

Pro-inflammatory messengers → Tissue damage

Reduce aggressive messengers

Pro-inflammatory messengers → Tissue damage



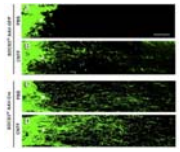


Kroner et al., Neuron, 2014

4. Other research

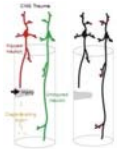
Research avenues

Regeneration

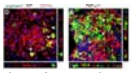


Rehabilitation

Plasticity



Remyelination



Reduction of secondary damage

Acknowledgements

MEDICAL COLLEGE OF WISCONSIN
ADVANCING A HEALTHIER WISCONSIN

WINGS for LIFE