

Interaction Between Speech Pathology & Audiology for Blast Injuries

Lisa A. Newman, Sc.D.

Laura Battiata, M.S.

Joyce Gurevich-Uvena, M.A.

Sandra Martin, M.S.

Katherine W. Sullivan, M.S.

Army Audiology & Speech Center
Walter Reed Army Medical Center

Introduction

- Speech, swallowing, and voice deficits from blast injuries have not been researched or defined
- Need for outcome data is equally as important for war injuries as it is for any other population

Speech-Language Pathologists

- Role is multi-faceted
 - Swallowing
 - Voice
 - Speech, Language, and Cognition

Speech Pathologist's Role

- 66% of patients are referred for swallowing evaluations
 - Instrumental assessments of swallowing
 - Videofluoroscopic Swallow Study
 - Fiberoptic Endoscopic Evaluation of Swallowing
 - Swallowing Therapy
- 56% have cognitive/linguistic deficits
 - Language Therapy
 - Cognitive/linguistic Therapy

Speech Pathologist's Role

- 30% have tracheostomies
 - Speaking valves
- 29% have voice disorders
 - Diagnosis and Treatment
 - Amplification

Injuries - Polytrauma

Blasts

- Head/brain injury – penetrating head injury, open head injury, closed head injury, s/p craniectomy
- Vision damage – to optic nerve, eye damage, enucleation of eye
- Facial disfigurement – facial laceration, open wounds
- Mandibular/labial/dental avulsion
- Trauma to middle/inner ear
- Abdominal injury
- Traumatic amputation
- Excessive dirt and debris in wounds

Possible Sequelae of Blast Injuries

- Coma / lethargy / fatigue
- Generalized weakness
- Intubation / sedation / ventilation / tracheostomy
- Compromised respiratory support
- Drains, chest tubes
- Isolation precautions (e.g. acinetobacter)
- Mandibular maxillary fixation

Possible Sequelae of Blast Injuries

- Speech / language / cognitive disorders
- Mental status alteration
- Memory deficits (secondary to malnutrition?)
- Hearing loss
- Visual deficits
- Depression/Post-traumatic stress disorder
- Sleep disorders
- Delayed response time
- No visible symptoms

Interaction Between Speech Pathology & Audiology

- ICU – Diagnostic process begins
 - Differentiate hearing loss from auditory comprehension deficits
- Patient transferred to ward, eventually may be treated as an outpatient
 - Formalized hearing testing
 - Comprehension cognitive/linguistic evaluation
 - Treatment plan coordinated from results of both disciplines
 - Both disciplines are part of the inter-disciplinary team

Barriers to Speech Pathology and Audiology Intervention

- Coma / lethargy / fatigue
- Mental Status – may require sedation
 - Agitation
 - Pain medication
- Multiple Surgical Procedures
 - Sedation
 - Unavailable

Barriers to Speech Pathology and Audiology Intervention

- Respiratory Difficulties
 - Pulmonary injury
 - Ventilatory support
 - Trach
- Isolation precautions (Acinetobacter)
 - Unable to take instruments to patient
 - Unable to take patient out of room
- Non-English speaking families
- Family, marital, and financial issues

Implications of Hearing Loss for Speech Diagnostics & Therapy

- Hearing loss is not always apparent
- Group Treatment
 - Modify activities
 - More visual tasks with hearing loss
 - Difficult with vision impairments
 - Modify placement/position of patient in cases of unilateral hearing loss
 - Assistive listening devices until fitted with hearing aid or surgery

Implications of Cognitive/Language Deficits for Audiology Services

- Cognitive deficits not always apparent when speech is unimpaired
- Impaired attention/concentration
- Learning and memory difficulties
- Executive control dysfunction (unable to perform complex tasks, e.g. completing paperwork for hearing aid)
- Communication problems

Implications of Traumatic Brain Injury for Audiology & Speech Pathology

Psychogenic Symptoms	Neurogenic Symptoms
Denial	Lack of awareness
Anger & irritability	Frustration
Depression	Lack of initiative
Rigid compulsiveness	Distractibility
Emotional lability	Lability
Social withdrawal	Lack of initiative
Sense of futurelessness	Impaired planning
Thought disorder	Aphasia, anomia, or confusion
Personality or conduct disorder	Impulsivity, social disinhibition

Conclusion

Implications for practitioners

- Large numbers of injuries are too great for the present VA system or military hospitals
 - More than 17,000 injuries have been evacuated from Iraq
 - 2,302 (14%) returned to their units in Iraq for further duty
 - Rest sent to U.S.

Peake JB, NEJM, January 20, 2005

- Warfare today is not that much different than civilian casualties
 - Gunshot wounds
 - Terrorism (e.g., 9/11, Oklahoma City)

Take Home Message

Complex cases

Some rapid recovery (e.g. swallowing)

Longer lasting cognitive-linguistic deficits

Deficits may not be apparent or reported

Interdisciplinary approach