After the initial impact, a brain injury can bring with it an array of ongoing disorders, some of which you may be more familiar with than others. In this issue of Brain Injury News, we consider the impact of some of these, and examine the techniques and support available to correctly identify and address them.

On page four we take a look at epilepsy – one of the more common and challenging results of a brain injury, but one that can be managed effectively with the right support. We look in particular at an interesting type of surgery that’s being trialled by the Epilepsy Society and partner organisations.

While perhaps less obvious than the physical effects of a brain injury, many patients develop problems with speech and language. This can affect a whole range of skills we usually take for granted, including remembering and forming words, reading, comprehension, and being able to hold a conversation. Besides the frustration and upset this can bring, it can also cause practical problems such as making it challenging to return to work. We consider this firstly in an article on aphasia and then in one on dyslexia; both conditions that can result from an acquired brain injury.

We hope you enjoy this issue of Brain Injury News. If you’d like to receive copies in the future, please join our mailing list by emailing julie.hume@braininjurygroup.co.uk

Professor Lindsay McLellan
Emeritus Professor of Rehabilitation and non-executive consultant of the Brain Injury Group.
Understanding aphasia

Losing the ability to communicate can be devastating. But with specialist treatment, understanding and support, people with language disorders like aphasia can lead active and fulfilling lives.

What is aphasia?
Aphasia is a language disorder that results from disease or damage in the brain. People with aphasia may have difficulty understanding spoken language, difficulty expressing themselves, or both. Their ability to read or write may also be affected. It needs to be distinguished from disorders of speech production in which the underlying language processes are intact such as slurred speech and low volume/quiet speech (dysarthria and dysphonia).

Causes and types of aphasia
The most common cause of sudden onset aphasia in adults is stroke. But anything that causes damage to the language areas of the brain can result in aphasia, such as a traumatic brain injury or brain tumour. There are different types of aphasia, determined by the part of the brain that has been affected.

- **Expressive aphasia**
  When someone has expressive (or Broca's) aphasia, their speech isn’t fluent but their understanding of language is apparently normal (although they may have mild difficulty with complex sentences). Their speech may be ‘telegraphic’, which means they use important verbs and nouns to get ideas across but leave out small grammatical words. Naming and repetition is also impaired.

- **Receptive aphasia**
  Typically, people with receptive or Wernicke's aphasia speak fluently but make a lot of errors, so speech is 'empty'. They may substitute words incorrectly, or create new words. Understanding is also poor, as is naming, repetition, reading and writing.

- **Other syndromes**
  There are many other types of aphasia – characteristics depend on exactly where the brain has been affected. Some result in difficulties just with naming (e.g. objects), in which case people tend to talk around the subject to get their ideas across. Sometimes people just have difficulties with reading but not understanding spoken words.

Diagnosing aphasia
If someone has had a stroke or brain injury and shows signs of language difficulties, they need to be assessed by a specialist speech and language therapist. Their diagnosis should be explained to them (and their relatives) in detail, and in a way they can understand. This can take time and the information may need to be repeated several times.

If someone has had a stroke or brain injury and shows signs of language difficulties, they need to be assessed by a specialist speech and language therapist. Secondly, the therapist will work with the person to develop a range of communication strategies. This might include things like waving instead of saying hello, or having a card to explain their difficulties, which they can use when they are shopping or in the bank. Often treatment will take place in groups so that people with aphasia can get used to the ebb and flow of normal conversation and start to feel more confident in using new skills and strategies.

Advice for friends and family
Approaches that can help people communicate more effectively include:

- avoiding correcting the person’s speech or interrupting
- allowing them plenty of time to talk
- minimising distractions
- using short, uncomplicated sentences
- checking that the message is understood, possibly through repetition
- writing down key words and clarifying their meaning.

Communication aids can also help. These might include simple booklets with images of things the person might want to refer to, such as family members, their home, the shops, and food and drink.

When speech and language therapy finishes
It is important to remember that the end of speech therapy does not signal the end of recovery. Many people report that language continues to improve for a long time, and the more the skills are used the easier they become.

Treatment programmes
Aphasia should be treated by a skilled speech and language therapist. After analysing the patterns of spoken and written language used, the therapist should develop a treatment programme that aims, firstly, to improve the underlying language difficulty. For example, if the person has difficulty naming, the therapist should identify the relevant vocabulary and use repetitive practice.

For more information, on aphasia, self help groups and communication strategies, contact the Speakability Helpline: 080 8808 9572 or visit speakability.org.uk
Since April 2013, everyone who receives help from Social Services will have a Personal Budget. This new approach to social care is designed to be flexible and meet people's individual needs. It could help thousands of disabled people remain independent and active members of their local community.

What is a Personal Budget?
A Personal Budget is a sum of money given to people to pay for their social care and support. The amount received is based on someone's 'eligible needs', following an assessment by Social Services.

Personal Budgets were introduced to give people greater control over the way they receive support. Local councils must initially provide an 'indicative budget' – an estimate of how much the payment will be. Once this is in place, they can begin to develop a support plan. Friends, relatives, or social workers/care managers may get involved at this stage, to help to identify what matters most to the person and works best for them. The process is intended to give people a greater say over their support as well as control over how it's provided.

All local councils should now be offering Personal Budgets to everyone eligible for support.

How Personal Budgets are changing
Most local councils are now in the process of changing how they work out funding for Personal Budgets. Rather than a localised formula, they will use a system recommended by the government called the Common RAS (Resource Allocation System). The aim is to ensure that decisions about funding are easier to understand, and the system is easy to use and fair to everyone.

The new system will use forms that are simpler to fill in. It is also more focused on telling people how much their Personal Budget will be as early as possible, so that they can start planning how best to spend it.

Help and support
While Personal Budgets could help thousands of disabled people remain independent and active members of their local community, many people may understandably find this new idea of 'personalisation' perplexing. It can be especially difficult in the early stages of working out what they need, and how to make the most effective use of the budget. There may also be concerns about payments. The assessments are initially carried out by the local council and your patients may feel unhappy with their allocated level of support. If this is the case, they can seek specialist advice from a local community care specialist (such as a solicitors firm), who can help them make an appeal against the decision.

What can a Personal Budget be used for?
Generally, Personal Budgets must be used for things that directly relate to someone's social care needs, but it will depend on a person's individual circumstances and preferences. For example, it may pay for:
- help with cooking, shopping and cleaning
- holidays
- leisure activities
- looking for paid or voluntary work.

What can't it be used for?
A Personal Budget can't be used for things that aren't directly related to social care needs. These can include:
- gambling
- alcohol, drugs and tobacco
- anything deemed to be illegal
- anything that may harm themselves or others
- services which are solely the NHS' responsibility.

Local councils may have other restrictions, based on an individual's circumstances.
Epilepsy is a common and serious neurological condition where there is a tendency to have seizures that start in the brain. It is usually only diagnosed when a person has had more than one seizure.

Everyone has the potential to have a seizure, but some people are more likely to than others. A ‘seizure threshold’ is our individual level of resistance to seizures. Damage to the brain (for example a severe head injury) can lower a seizure threshold, making seizures more likely. Epilepsy resulting from brain injury is referred to as ‘symptomatic’ epilepsy, because it has a known cause.

Diagnosing epilepsy
There are over 40 different types of epilepsy. Just knowing that a person ‘has epilepsy’ does not tell you very much about their condition and the type of seizures they have.

Epilepsy can be difficult to diagnose – there are no obvious signs a person has it unless they are having a seizure. People may not remember what happened during a seizure, so it can be helpful to have information from someone who witnessed what happened.

Epileptic seizures can affect awareness, feelings, movement or behaviour. For example, complex focal seizures (also known as complex partial seizures) can include automatisms (repetitive movements without purpose) such as lip smacking or fiddling with clothing. Many people have periods of confusion during and after a seizure.

If there is a possibility that someone has epilepsy, they should be referred to a neurologist. There is no single test that can diagnose the condition. Several investigations are used, including blood tests, Electroencephalograms (EEG), which record the electrical activity of the brain by picking up the electrical signals from the brain cells through electrodes on the head, and MRI scans which may provide additional information. For example it might help determine the location of the focal point of the seizure. However, these tests cannot confirm or rule out epilepsy on their own.

Treating epilepsy with medication
Treatment for epilepsy usually involves taking anti-epileptic drugs (AEDs). These are not a cure but they make the brain less likely to have seizures by reducing the excessive electrical activity (or excitability) of the neurones (nerve cells) that normally cause a seizure. They are not used to stop seizures while they are happening.
Different AEDs work in different ways, but they all aim to prevent seizures. Around 70 per cent of people with epilepsy could control their seizures with the right medication. This depends on the type of epilepsy they have. ‘Optimal therapy’ is seizure control using the smallest dose of the fewest AEDs, and with the fewest side effects.

**Brain surgery**
For people whose seizures are not controlled by medication, there may be other treatment options to reduce seizures, for example brain surgery.

There are different types of epilepsy surgery – one involves removing the part of the brain that is causing seizures, another involves separating the part of the brain that is causing seizures from the rest of the brain.

For some people, surgery can stop or reduce the number of seizures they have. Surgery might be considered if AEDs have not stopped or significantly reduced the number of seizures, and a physical cause for epilepsy is found and in only one area of the brain.

A physical cause of epilepsy, such as scarring or damage to the brain from a head injury, is called the ‘epileptic focus’. The epileptic focus can be different from person to person.

Memory and psychological tests are also used to see how a person’s memory and lifestyle might be affected after surgery. Surgeons will look at whether:
- they can reach the epileptic focus and remove it safely without causing new problems
- other parts of the brain may be affected by surgery, especially the parts that control speech, sight, movement or hearing
- surgery gives a good chance of eliminating seizures.

Around 70 per cent of people who have surgery find it stops their seizures.

“Several investigations are used, including blood tests, Electroencephalograms (EEG), which record the electrical activity of the brain by picking up the electrical signals from the brain cells through electrodes on the head, and MRI scans which may provide additional information.”

**New epilepsy surgery being trialled in UK**
A pioneering new system is being developed that, if successful, could lead to safer, more accurate brain surgery for people with epilepsy.

With funding from the Department of Health and the Wellcome Trust, Epilepsy Society is working on a sophisticated form of ‘smart surgery’ called Epilepsy Navigator. It’s hoped it will result in improved seizure freedom and reduced risk of damage to language, memory, movement and vision.

The interactive 3D-neuronavigation system will simultaneously display critical brain functions, lesions, arteries, veins, blood vessels and the white matter tracts that connect different areas of the brain. It will enable neurosurgeons to plan the best approach for inserting recording electrodes in the brain and the most accurate way of removing the parts that give rise to seizures without damaging any vital structures.

Epilepsy Navigator is currently being evaluated by MedTronic Neuronavigation in the USA. It’s being introduced into epilepsy surgery in the UK at a clinical trial at the National Hospital for Neurology and Neurosurgery.

For more information visit [epilepsysociety.org.uk](http://epilepsysociety.org.uk) or call the Epilepsy Society helpline on 01494 601400. It provides information to health professionals and the general public who want to learn more about epilepsy and how it can be treated.
A brain injury can bring on a range of mild to severe reading disorders, which can have a huge impact on people’s lives. Acquired dyslexia and acquired alexia are examples of this where a once automatic task has become difficult or unreliable. There are different forms, and the difficulty can be quite mild and subtle, so it is possible that the link to the brain injury is not made. Even mild difficulties can have a profound effect on someone’s wellbeing and their working life. From enjoying a novel or newspaper to using written materials at work, reading can become disrupted or so severely damaged for some people that they find it extremely challenging and may avoid it altogether.

Different types of reading disorders after a traumatic brain injury (TBI)

- **Occipital or posterior alexia**
  This disorder is where patients lose the ability to read printed material but retain the ability to write.

- **Attentional dyslexia**
  A disorder where patients are able to read single words but are poor at naming the letters within those words.

- **Neglect dyslexia**
  Patients with visual neglect symptoms may also neglect one side of a word.

- **Surface dyslexia**
  This describes patients who rely on grapheme to phoneme conversion (written letter to sound of letter) rather than recognising and reading whole words. As a result, they are more able to read regular words than irregular words. Someone with this condition may feel that the majority of words are unfamiliar, sound them out, and pronounce them slowly. Some may have intact auditory processing of words, speech and semantic systems, although others are found to be disrupted. Sometimes the person is unable to read aloud but can understand what they are reading.

- **Deep dyslexia**
  Here the problem is semantic errors, for example reading “dog” when the word is “cat”. There can also be frequent errors with function words, for example “and” is read as “the”; and visual errors, such as “television” becoming “telephone”.

Lisa Harris, Senior Specialist Speech and Language Therapist, and Dr Emer MacSweeney, Consultant Neuroradiologist, explain why cognitive issues following a brain injury should never be dismissed.
Case study

A young solicitor was hit by a car travelling at 30mph. At A&E there was a fracture of the wall of the left orbit but normal consciousness.

The Glasgow Coma Scale was 15/15 and briefly dipped to 14/15. A CT brain scan demonstrated a 9mm area haemorrhagic contusion laterally in the left superior/lateral temporal lobe and minor contusion in the adjacent left parietal lobe.

The patient made a good recovery from the accident, but one year later had started noticing a very specific problem with reading, described as “…what I imagine it must be like to have dyslexia”. There were also headaches and subjective memory impairment in respect to written material, which was interfering with performance at work. The patient only had problems remembering events she had read about and there was no history of these problems before the accident.

Detailed testing found her ability to read numbers and words was significantly impaired. The clinical presentation was consistent with focal damage to the left superior temporal gyrus.

A high field 3T MRI examination of the brain was performed to evaluate possible residual structural damage to the brain in the relevant region. The scan confirmed evidence of previous focal haemorrhagic cortical and subcortical bruising to the left superior temporal gyrus. It also suggested that the focal damage to the brain was more severe than normal for the level of consciousness and this was supported by the diffuse brain swelling observed on the CT scan from the day of the accident.

While it is unusual to develop such specific dyslexia related symptoms secondary to brain trauma, there is considerable evidence that people with dyslexia exhibit a developmental disorder affecting distribution of grey and white matter in the left superior temporal gyrus – exactly where the damage was in this case.

With the problem correctly identified, the patient could receive focused support to help improve her reading skills, an essential part of their work as a solicitor.

Conclusions

Any cognitive issues that follow a traumatic brain injury, however subtle, should never be dismissed. Where the impairment was not present before the injury, it is possible that the symptoms could be directly attributable to the accident. Careful assessment of the specific difficulties and the underlying cause can help direct targeted rehabilitation to rebuild skills and maximise occupational capability.

References

1 Grey and white matter distribution in dyslexia: AVBM study of superior temporal gyrus asymmetry, Marjory Doyle et al October 1st 2013, PLOS one, eight (10) EE76823. DOI: 10.1371/journal.pone.0076823.
Bringing people together

As part of our commitment to bringing people together who are affected by brain injury (and those who work with them) we’ve launched a new events calendar on our website.

It highlights a range of events for people living with a brain injury – such as local Headway support groups or regional Acquired Brain Injury Forums meetings – to training events for healthcare professionals. We also list national awareness weeks like Carers Week and Road Safety Week, as well as social and fun(draising) occasions happening around the country.

We want to make sure this resource is useful for as many people as possible, so please let your patients know about it, and don’t forget to send us your events too, so we can add them to the calendar.

Get in touch at julie.hume@braininjurygroup.co.uk or braininjurygroup.co.uk

The BIG Directory of services

Did you know that we have an online services directory to signpost people affected by brain injury to specialist support services? A wide range of services is included, from family holidays to home insurance, expert brain injury solicitors to mobility aids, support groups and even footwear. The BIG Directory is easy to navigate and people can search by location, category or alphabetically. It has national coverage with services across England, Wales and Scotland.

“When my husband was left severely brain injured, life became very complicated,” says Sue Organ. “Although there were services and support available, it seemed disjointed and I spent hours searching the internet for information. I am pleased the Brain Injury Group has a directory that connects carers with all sorts of specialist services, including support groups and an online forum where highs and lows are shared with others in similar circumstances.”

Braininjurygroup.co.uk

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