



Standard Operating Procedure: Protocol for Freezing Brain & Spinal Cord

Document History

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This SOP will outline the procedure for freezing coronal slices of brain and sections of spinal cord

Background

Document UoS position for this SOP and how the school will implement this

Definition

Brain freezing procedure

Procedure

MND, control and other neurological disorders

Donations from MND patients are normally dealt with by the mortuary at the Royal Hallamshire hospital but the brain may be removed by the local hospital mortuary, eg. Chesterfield Royal Hospital fixed in formalin and transferred to the Hallamshire hospital. The procedure for donations dealt with by the Hallamshire are as follows

1. The brain and spinal cord are removed and are assigned a post mortem number.
2. The post mortem number becomes the brain bank number and is recorded in a book along with brief patient details, post mortem delay and clinical diagnosis (where available)
3. One hemisphere, the majority of the cerebellum, half the brain stem and sections of the spinal cord are suspended in formalin and labelled with the post mortem number and patient identifier details.
4. The fixed specimen (fixation ideally 3-4 weeks) is transferred to the histopathology department at the RHH for dissection and processing where it is assigned a hospital lab number. Paraffin blocks are generated according to a set protocol and sections generated for diagnosis.
5. The other half of the brain is coronally sliced and along with samples of cerebellum, brain stem and spinal cord snap frozen between Teflon coated plates cooled by liquid nitrogen. Liquid nitrogen is poured into a rectangular insulated stainless steel box which contain the Teflon plates which site on copper plates which accelerate cooling.
6. Each individual piece of tissue is sealed in a air tight bag and assigned the brain bank number and a sample identifier between 1 and 40 e.g NP34/05-12 which is recorded in the book. The book is kept in a lockable room within the mortuary premises and only the neuropathologists, mortuary and brain bank staff have access.
7. Bagged frozen specimens are placed into boxes and labelled with the brain bank number before transfer to a -80oC freezer
8. Check that a post mortem consent form came with the brain and photocopy for brain bank records. If consent form not present check with the NHS histopathology department or with the clinical

neurology unit specialist nurses.

CFAS cases

Each CFAS centre (Cambridge, Gwynedd, Liverpool, Newcastle, Nottingham Oxford) is associated with a University/NHS Trust neuropathology department that deals with the post mortem and neuropathological diagnosis. The exception is Gwynedd where the fixed brain is transferred to Sheffield for diagnosis.

Newcastle, Cambridge and most recently Oxford snap freeze half brains according to a similar protocol as above. All have their own documented standard operating procedures for the protocol.

Sheffield as the lead neuropathology CFAS centre is in the process of centralising all archived CFAS tissue into their brain bank once a neuropathology diagnosis has been issued. This includes wet formalin fixed tissue, frozen tissue, paraffin blocks, stained slides, unstained slides and DNA extracts from tissue, blood and saliva.

3. Associated Documents

	Document	Document Reference
1	COSHH Handling of fresh Human Tissue	BIO: COSHH: Procedure 4
2	Handling of LN2	BIO: RA: LN2
3	Paraffin Block sampling form	BIO: FORM: 17
4	Set up & Cleaning Protocol for Brain Freezing	BIO: SOP: 22
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