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Islet Transplantation in the UK

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Abstract

This commentary outlines the development and current status of the UK Islet Transplant Programme in the UK. The author makes the case that it is now time for similar fully funded beta-cell programmes to be made available in many other countries as well.

I read the opinion piece by Ricordi and Japour in STAT (August 27,2019) with interest. In the UK, clinical islet transplantation has been commissioned by the National Health Service in England and Wales since 2008, and was commissioned in Scotland the following year. The UK Islet Transplant Consortium (UKITC) has been established as a 'hub and spoke' collaborative model with 3 commissioned islet isolation centres (Oxford, Kings College London, or Edinburgh) and 7 commissioned islet transplant centres (Oxford, Kings College London, Edinburgh, Manchester, Newcastle, Bristol, and Royal Free London). Donor pancreases (DBD and DCD) are retrieved from around the country and sent to the 'on call' isolation facility for processing, before the islets are distributed for transplantation at the recipient's transplant centre. The UK Programme now performs about 40 islet transplants per year with the primary recipient group being Islet Transplant Alone (ITA) for life-threatening hypoglycaemia unawareness. However, commissioning has also been granted for Simultaneous Islet Kidney (SIK), Islet After Kidney (IAK), and in 2019, the government commissioned 4 total pancreatectomy and islet autotransplant centres for the treatment of chronic pancreatitis (Oxford, Kings College London, Leicester and Newcastle). The National Institute of Clinical Excellence (NICE) has determined that the primary outcome measures for ITA in the UK are resolution of hypoglycaemia unawareness and stabilisation of HbA1C rather than insulin-independence. These primary outcome measures are achieved in over 95% of patients[1].

One of the great strengths of the UK Programme has been the close integration and collaboration between centres. Recipients are all placed on a national waiting list and each centre has signed up to common inclusion/exclusion criteria and common transplant protocols. All patients undergo similar post-transplant graft monitoring with same-protocol post-transplant Mixed Meal Tolerance tests undertaken at 1 month, 3 months, 6 months, and annually post transplantation and the blood samples are analysed at a central reference laboratory. All MMT results are then reported to a national islet transplant database maintained by NHS Blood and Transplant (NHSBT). The governance of the UK programme is well established; each isolation facility operates under GMP regulations and is licenced by the Human Tissue Authority (HTA). All isolation outcomes are monitored by NHSBT, and both the isolation and transplant programmes are governed by the UK Islet Steering Group (UKISG), a national body that comprises all the key stakeholders. UKISG in turn reports to the NHSBT Pancreas Advisory Group.

It is important to highlight two initiatives that have been particularly central to the success of UKITC: When the nationally commissioned islet transplant programme started, allocation of donor pancreases was strictly prioritised for whole organ transplantation. This led to the frustrating situation of the programme being fully funded as a national clinical service, but it only receiving few quality donor organs. This was addressed in 2012 with the introduction of a pioneering Joint Allocation Scheme for whole pancreas and islet transplantation [2]. In this

pioneering scheme, the whole pancreas and islet transplant communities came together to develop an allocation algorithm in which patients waiting for either transplant modality are placed on a common waiting list. Each listed patient accumulates points for a wide range of criteria (e.g. length on waiting list; geographical proximity to donor organ; recipient on dialysis), and moves up the list. Available organs are allocated to whichever matched recipient is at the top of the waiting list, whether that recipient be waiting for whole pancreas or for islets.

The second initiative that has helped shape the UKITC is the development of the concept of integrated beta-cell replacement. Whereas previously, insulin technology, whole pancreas transplantation, and islet transplantation, all functioned in separate 'silos', and were seen as being in 'competition' with each other, UKITC has been instrumental in helping to develop an integrated approach to the management of hypoglycaemia and complex type 1 diabetes. In particular, whole organ transplantation and islet transplantation now function together as complementary treatments under the overall banner of beta-cell replacement. In most centres, patients are reviewed in joint beta-cell replacement clinics in which both transplant modalities are available, and in which the choice of treatment is specifically matched to the recipient.

It is ironic that the decision to commission islet transplantation in the UK in 2008, was largely influenced by the good outcomes seen in the clinical trials of islet transplantation that had been performed in North America. This is a treatment that can literally be 'life saving' for patients with life-threatening hypoglycaemia unawareness. It is imperative that this important treatment also now be made available for patients across the USA.

References

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