Poster Presentation





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Katelyn Hicks et al., Curr Pediatr Res, Volume 23
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Neonatal Sepsis in the Emergency department

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Sepsis and infection in neonates have been one of the largest contributors to infant mortality. The information from the 2016 neonatal sepsis guidelines recommends antibiotic administration within sixty minutes. The issue of neonatal sepsis compliance was found through chart audits in the emergency department. These audits are done to satisfy compliance with the county board for EDAP, emergency department approved for pediatrics, standards. It was found that each month for the last year (2017) the neonatal sepsis compliance has consistently been zero percent. The nursing staff was given increased re-education on the topic of neonatal sepsis in all staff meetings and daily shift huddle. A new standard of work was formed to create a step-by-step guideline for care of the neonatal sepsis patient. Each staff member was signed off after a one-on-one education to the standard of work. After education the data showed an increase in compliance in antibiotic administration within 60 minutes of arrival to the emergency department. There was a decrease in the average time from arrival to triage as well as an increase in compliance with triage within ten minutes for all patients under 60 days old.

Speaker Biography

Katelyn Hicks is currently obtaining her DNP in the focus of Family Nurse Practitioner at Loma Linda University, USA. Her doctorate is expected to be completed June, 2019. She is currently working as a registered nurse in an emergency department in Southern California.

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Transfusion and Morbi-mortality factors: An observational descriptive retrospective Pediatric Cohort study

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Background: Intraoperative and postoperative Morbi-mortality factors are multiple in pediatric patients. Studies in pediatric cardiac surgery and intensive care patients have identified transfusion as one independent factor among others. There is not a lot of data concerning transfusion related Morbi-mortality in other pediatric patients fields like neurosurgery, abdominal and orthopedic surgery. These were investigated.

Objectives: To identify Morbi-mortality risk factors in intraoperatively transfused and not transfused pediatric patients in neurosurgery, abdominal and orthopedic surgery.

Design: Retrospective observational descriptive pediatric cohort study.

Setting: Monocentric pediatric tertiary center, Necker Enfants Malades University Hospital Paris, from 1 January 2014 to 17 Mai 2017.

Patients: 594 patients with mean age of 90.86 ± 71.80 months were included. Inclusion criteria were the presence or the absence of transfusion in the intraoperative period in neurosurgery, abdominal and orthopedic surgery patients. Exclusion criterion was transfusion in the postoperative period until discharge from hospital.

Main outcome measures: Primary outcome was mortality and secondary outcome was morbidity in transfused and non-transfused patients. Mortality was assessed by deaths occurring intraoperatively or postoperatively during the entire hospitalization. Morbidity was assessed by intraoperative, postoperative complications, repeat surgery, length of stay in the intensive care unit, in the hospitalization ward, total length of stay in hospital and length of mechanical ventilation.

Results: Multivariate analysis revealed that ASA score was the independent risk factor for mortality (odds ratio 28.78, p-value<0.001). Transfusion (p-value<0.01), emergency surgery (p-value<0.05), type of surgery (<0.01), age (<0.05) and prematurity (<0.001) were independent risk factors for morbidity.

Conclusions: Patient outcome can be improved by applying specific preventive measures on each risk factor.

Speaker Biography

Claudine Kumba graduated as a Medical Doctor in 2001 and completed her specialization in Anesthesiology in 2006 at the Free University of Brussels (ULB, Université Libre de Bruxelles). She has a Paediatric Anaesthesia specialisation graduation since 2010 from the University of Aix-Marseille, Marseille, France. She has a Critical Care Medicine specialisation graduation since 2014 from the University of Montpellier 1, Montpellier, France. She is a paediatric anaesthesiologist in Necker Sick Children's University Hospital, in Paris, France. She has 12 publications and 17 citations. She is a member of the European Society of Paediatric Anaesthesiology (ESPA), the French Society of Anaesthesia and Critical Care (SFAR, Société Française d'Anesthésie-Réanimation) and the French Association for Paediatric Anaesthesiolgists and Intensivists) (ADARPEF, Association d'Anesthésistes et Réanimateurs Pédiatriques d'Expression Française) and the Belgian Association for Paediatric Anaesthesiology (BAPA).

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Environment risk factors for childhood Leukemia in the Gaza Strip: Case-control study

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Background: Childhood leukemia is one of the most common types of cancer developed children until 12 years old in Palestine without unknown causes and one of the top ten cancer types killers. The aim of this study is to identify the main environment risk factors for childhood leukemia among children in Gaza Governorates.

Methods: A case control study conducted from five Gaza strip governorates and consisted of 132 children divided in two groups (44 cases who had confirm of childhood leukemia and 88 controls had not). Controls and cases are matched by age, sex and residency. The cases distributed on Gaza Governorates. The cases were matching as 1 case: 2 control.

Finding: The results of the study showed that risk factors associated with childhood leukemia were as follows: 54.5% were males and 45.5% were females. exposure to Ultrasound during gestational period (P value=0.009), family cancer history (P value=0.036), daily beverage intake (P value=0.002) and additives in drinking (P value=0.000)), also, there was association between family history of smoking (P value=0.016) and pregnant exposed to passive smoking as (P value=0.018), pregnant exposed to aerosol (P value=0.011), child exposed to paints and aerosol (P value=0.001), child exposed to white phosphorus (P value=0.016), electromagnetic field (P value=0.007), while the study found child age, birth weight, child occupation, child exposed to (passive smoking and X ray) were not association for childhood leukemia. Also, mother age, mother exposed to X ray, white phosphorus and explosive material were not relevant for childhood leukemia. Likewise, live status, additives in food and Petroleum station in the same region were not associated with childhood leukemia.

Interpretation: The main of the environment risk factors appeared are avoidable and can be prevented.

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Alpha-2-agonists for sedation in children

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Clonidine and dexmedetomidine are highly selective alpha-2-agonists of the imidazole subclass. Clonidine which has been licensed since 1966 is 200 times more specific for alpha 2 receptors compared to alpha 1 receptors. It is most commonly known as antihypertensive drug, but its use has been extended to several off label applications over the years. Dexmedetomidine is a more recently approved drug with a specificity of 1600: 1 for alpha-2 receptors which makes it nearly a complete alpha-2 agonist. Both drugs bind to peripheral and central sites in the nervous system. Sedative and anxiolytic effects result from activation of alpha-2-receptors in the locus coeruleus of the brainstem, while analgesia is exerted through activation of alpha-2-agonists in the dorsal horn of the spinal cord.

Sedation produced by alpha-2 agonists resembles natural sleep with an EEG pattern similar to non-REM sleep. The key advantage of clonidine and dexmedetomidine is their ability to maintain respiratory drive. Cardiovascular effects are characterized by a mild decrease in heart rate and blood pressure. Furthermore alpha-2 agonists have been shown to be devoid of neurotoxic effects on the developing brain in animals and show beneficial effects when administered alongside with general anaesthetics. All these qualities make alpha-2 agonists nearly ideal sedatives for children and an interesting alternative to commonly used benzodiazepines. Numerous studies prove the effectiveness and safety of alpha-2-agonists in children. Current clinical applications are premedication in paediatric anaesthesia, sedation for non-invasive and invasive procedures, prevention and treatment of emergence delirium, analgesia, as an adjunct to general anaesthesia, sedation in the intensive care unit as well as treatment of withdrawal syndrome and delirium.

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Analysing current practice in the assessment of Paediatric Chest Pain

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Background: Chest Pain is a common presenting complaint to general practitioners, paediatricians and the emergency department, often resulting in a paediatric cardiology referral. However, unlike adult chest pain, paediatric chest pain rarely has a cardiac aetiology, often resulting in high levels of unnecessary testing and associated anxiety. Currently there is no UK guidance for paediatric chest pain assessment. Aims: To assess the outcome of referrals to a paediatric cardiology department with primary symptom of chest pain.

Methods: A cross-sectional observational study was conducted of paediatric patients aged 4-18 years referred to the paediatric cardiology department of Southampton General Hospital (SGH) with the primary symptom of chest pain. Prospective and retrospective data was gathered in paediatric cardiology clinics and from patient notes at SGH between October 2016-July 2017. Data was collected regarding presenting symptoms, patient and family history, physical examination, diagnostic testing and eventual diagnosis.

Results: A total of 100 patients were included in the study (84 retrospective, 16 prospective) 47 patients were female and 53 males, with an average age of 12.09 years (+/- 3.64). Chest pain aetiologies included 65% non-cardiac/idiopathic, 27% musculoskeletal, 3% gastrointestinal, 4% psychogenic and 1% respiratory. No patients were identified to have cardiac chest pain. Patients had an average of 2.9 diagnostic tests.

Conclusions: Paediatric chest pain rarely has a cardiac aetiology. Practice variation and unnecessary resource use is a concern and a standardized approach to assessment could potentially improve patient care. A detailed history, physical examination and ECG are usually sufficient for diagnosis.

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Direct evidence of viral infection and mitochondrial alterations in the Brain of fetuses at high risk for Schizophrenia

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There is increasing evidences that favour the prenatal beginning of schizophrenia. These evidences point toward intra-uterine environmental factors that act specifically during the second pregnancy trimester producing a direct damage of the brain of the fetus. The current available technology doesn't allow observing what is happening at cellular level since the human brain is not exposed to a direct analysis in that stage of the life in subjects at high risk of developing schizophrenia.

Methods: In 1977 we began a direct electron microscopic research of the brain of fetuses at high risk from schizophrenic mothers in order to finding differences at cellular level in relation to controls.

Results: In these studies, we have observed within the nuclei of neurons the presence of complete and incomplete viral particles that reacted in positive form with antibodies to herpes simplex hominis type I [HSV-1] virus, and mitochondria alterations.

Conclusion: The importance of these findings can have practical applications in the prevention of the illness keeping in mind its direct relation to the aetiology and physiopathology of schizophrenia. A study of the gametes or the amniotic fluid cells in women at risk of having a schizophrenic offspring is considered. Of being observed the same alterations that those observed previously in the cells of the brain of the studied foetuses, it would intend to these women in risk of having a schizophrenia descendant, previous information of the results, the voluntary medical interruption of the pregnancy or an early anti HSV-1 viral treatment as preventive measure of the later development of the illness.

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Comprehensive multidisciplinary approach for children with Cerebral Palsy – Together we can make a change

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Cerebral palsy (CP) arises due to an injury in the immature brain, and even in patients in whom the disorder is nonprogressive the resulting disability is lifelong. During the growth of a child with CP deformities get worse, and lead to decreased function and ability to perform daily life activities, depending on orthopedic and general management program implemented. International guidelines for early diagnosis and intervention for cerebral palsy were published in 2017. They state that early recognition of CP should occur as early as possible leading to provide diagnostic-specific early intervention and surveillance to optimize neuroplasticity and prevent complications, as well as to provide parents the available support. Orthopedics and CP rehabilitation has changed significantly over the past 10 years. It is a common ground that long term best results come from individualized and multidisciplinary approach. Physiotherapy has shifted towards approaches that emphasize goal-oriented activity-based therapy, and intensive task training creating an optimal environment for motor learning. It is a recent concept that low muscle strength, and not spasticity, causes the greatest limitations in motor function in children with CP2, and this has shifted focus from spasticity management towards active, intensive and task specific training for these children. During the past twenty years, increasing emphasis has been placed on correction of soft tissue contractures and bony deformities in a single event multilevel surgery (SEMS), which has become the standard of care in CP management despite difficulties of make its results objectively measurable 3,4. One of the most important aspect of successful SEMS is to custom made the surgical technique and choosing right surgical dose according to patient's functional level. Author's surgical rational and multidisciplinary experience will be exposed in this oral presentation.

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Neonates NREM sleep

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NREM sleep is the distinct stage of sleep during which essential brain functions related to neonates' neurodevelopmental outcome, take place. The multisensory environment of neonatal intensive care unit (NICU) often interrupts or inhibits neonatal NREM affecting its quality and duration. The purpose of this study was to investigate the relation between noise and light levels in the NICU environment and NREM sleep duration. Neonatal sleep was recorded through aEEG in three consecutive days. Recordings on the first day were under baseline conditions, the second day under sound intensity reduction, and the third day under light intensity reduction. Thirty-two neonates finished all the different parts of the study and were finally included in the analysis. By reducing sound or light intensity the duration of NREM sleep increased significantly ($p<0.001$, and $p<0.001$, respectively). No significant statistical differences were found in REM and total sleep duration among the 3 different days. Intense noise and light affect NREM sleep and may have detrimental effects on neurodevelopmental outcome of hospitalized neonates. Medical and nursing staff should be aware of the neonates' needs for adequate and good-quality sleep and implement interventions to optimize the NICU surroundings.

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Dilemma in Neonatal screening for diagnosis of Cystic Fibrosis with new terminology of CFTR- Related Metabolic Syndrome (CRMS) and CFTR Related Disorders (CFTR-RD)

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Cystic Fibrosis (CF) is inherited multisystem disorder (autosomal-recessive disease) caused by mutations in the CF transmembrane conductance regulator (CFTR) gene that encodes a cyclic adenosine monophosphate–regulated chloride and bicarbonate channel expressed at the apical membrane of epithelial cells. leads to a wide and variable array of presenting manifestations and complications. It is the most common life-threatening monogenic condition in the white population with an estimated birth prevalence of 1 in 1500–4000 newborns in European countries and European-derived populations. CF is responsible for most cases of exocrine pancreatic insufficiency in early life and is the major cause of severe chronic lung disease in children. It is also responsible for many cases of hypon5**atremic salt depletion, nasal polyposis, pan sinusitis, rectal prolapse, pancreatitis, cholelithiasis, and nonautoimmune insulin-dependent hyperglycemia. The diagnosis of CF has been based on a positive quantitative sweat test (Cl− ≥60 m Eq/L) in conjunction with 1 or more of the following features: typical chronic obstructive pulmonary disease, documented exocrine pancreatic insufficiency, and a positive family history. With newborn screening, diagnosis is often made prior to obvious clinical manifestations such as failure to thrive and chronic cough. CF newborn screening is a complex procedure that uses multiple step combinations of tests on dried blood spots. The first tier is always a measurement of immunoreactive trypsinogen (IRT), followed in IRT-positive babies by other tests, which usually include mutation analysis of the CFTR gene. The aim is to identify neonates at high risk of having CF, these infants are then referred to a diagnostic service to confirm the diagnosis. Like any disease in screening process, there is the potential for indeterminate results. Infants with an indeterminate diagnosis present a treatment challenge to clinicians and a stress on families. Of those, there is a subset of infants with a positive newborn screen for CF, elevated immunoreactive trypsinogen and 1 or 2 copies of a CFTR mutation, but who have an initial negative sweat test and are asymptomatic. These infants have CFTR metabolic syndrome (CRMS) and should be followed in a CF center annually to ensure that they do not develop CF symptoms. Older children who did not have newborn CF screening available at birth can present the same way as those with CRMS but will be called CFTR Related Disorder (CFTR-RD) and not CRMS. All children with CRMS or CFTR Related Disorder need to have check-ups with a cystic fibrosis specialist doctor to be sure that any health problems are detected and treated properly. Objective: The goal of this presentation to review the Dilemma in neonatal screening for diagnosis of Cystic Fibrosis with new terminology of CFTR-related metabolic syndrome (CRMS) and CFTR related disorders (CFTR-RD). Understanding the terminology of CFTR-RD. and CRMS, increase awareness of close monitoring of these patients whether eventually develop further disease consistent with classical CF.**e:** fadi.mhadeen@yahoo.com

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Mapping parental needs in a neonatal (intensive) care unit as first step to develop a NeoParent mobile application

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The admission of a baby on a neonatal intensive care unit (NICU) is the start of a difficult period for parents. They are overwhelmed by emotions, information and the high-tech environment. Personalised information, communication, individual support and parent-participation are important. As a first phase of the development of a NeoParent mobile application, parental needs/experiences in a NICU were identified.

A descriptive qualitative approach was used conducting 11 semi-structured interviews. Inclusion criteria were a NICU-admission <1 year ago, 18-year, Dutch-speaking. Interviews were audiotaped and transcribed verbatim. Thematic analysis was performed to identify themes/patterns that emerged in the narrative content using NVivo.

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Poland syndrome: A case report

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Poland syndrome (PS) is a rare chest wall developmental anomaly characterized by ipsilateral agenesis/ hypoplasia of the sternocostal head of pectoralis major, hypoplasia of nipple or breast, absence of subcutaneous fat, multiple rib abnormalities, elevated and rotated scapula (Sprengel deformity) and ipsilateral digit abnormalities (brachydactyly, syndactyly). These findings vary and all are rarely found in a single individual. Poland Syndrome also (Poland's syndactyly, Poland sequence, and Poland's anomaly) was first described by Sir Alfred Poland in 1840. Etiology of PS remains unknown. It is rarely genetically inherited and is regarded as a sporadic event. It has been suggested that during the sixth week of gestation, the injury occurs due to regional vascular defect of the subclavian artery 1. It is a period associated with splitting of the two heads of pectoralis major and the development of tissues between the digits. The incidence of Poland's syndrome varies between groups (male versus female patients, congenital versus familial cases, and so on) and ranges from 1 in 7,000 to 1 in 100,000 live births, with higher frequency among males (ratio: 2:1-3:1). In75% of the cases, it is located on the right hemithorax in the unilateral form. Treatment is primarily reconstructive surgery depending on the severity of the malformation, gender and patient preference. Our reported case is A 4-year-old boy with no medical history who presented for evaluation of urinary symptoms. There were no breathing or cardiac complaints on review of systems and Uneventful pregnancy and delivery, with negative family history for same problem. Physical examination showed chest asymmetry with right anterior chest wall depression and flattening of the right pectoral region with displaced nipple. Abduction of the shoulders showed absence of the sternocostal head of pectoralis major. Hand examination showed Ipsilateral short and webbed fingers (symbrachydactyly).

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Treatable causes of intellectual disability in children

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Intellectual disability (ID) affects 2.5% of population worldwide. 85% of the treatable conditions known to cause global developmental delay or intellectual disability in children. Misdiagnosis is common and these disorders can mimic conditions like cerebral palsy. Recommendations to investigate possible metabolic or genetic aetiologies of intellectual disability are based on conditions and on the yield of diagnostic methods, rather than availability of causal therapy. Inborn errors of metabolism are subgroup of rare genetic/metabolic conditions for which an increasing number of treatments are now available. Some common causes of disorders of ID include disorder of amino acids cholesterol and fatty acids, creatine, glucose and its transport, lysosomes, metals, mitochondria, neurotransmission, organic acids, peroxisomes, urea cycle, and vitamins/co-factors. All these disorders can be identified by metabolic screening tests in the blood (plasma amino acids, etc.) and urine (creatine metabolites, glycosaminoglycans, etc.). Further or secondary tests depend on the results of these primary tests. Therapeutic modalities include sick-day management, dietary interventions, co-factor/vitamin supplements, substrate inhibition, stem cell transplant and gene therapy. Early interventions can improve or stabilize child's cognitive and behavioral development, control the seizures or other neurological manifestations.

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International internet-hospital.com.ua/ ™ as a main link in Primary Healthcare

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Internet-Hospital.com.ua (IH) is innovation for medicine and Healthcare. IH provides continuous connection between patients and doctors and medical facilities to each other in on-line and off-line mode. There is a function to exchange photo and video files.

IH can provide internet consultations different level. Internet consultations can be as primary medical aid, before the patient comes in an out-patient department, and highly specialized. Even if the patient is situated in distant place, he can consult in the IH and get the preliminary diagnosis. According the diagnosis and location IH finds optimal solution for him such as where and what specialist in which clinic.

IH automatically collect the symptoms the patients and creates the database. So, a doctor can see when and where the patient had health problem, look through analysis and any kind examinations and see attached files such as documents, photo and video.

IH has integrated artificial intelligence (AI). I called it Digital Diagnostics, which can make diagnosis with accuracy up to 100%. Digital Diagnostics can work under doctor's control and also in semiautomatic and automatic mode and produce unlimited quantity of consultation.

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Umbilical cord mesenchymal stem cells and umbilical cord blood mononuclear cells improve neonatal rat memory after hypoxia-ischemia

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Background: Neonatal hypoxic-ischemic encephalopathy (HIE) is a severe disease, and there's no effective treatment for severe HIE. In recent years, a large number of animal experiments have confirmed that stem cell transplantation has shown great potential in regenerative medicine, such as in the treatment of hypoxic-ischemic brain damage (HIBD)[1]. The most widely used are human umbilical cord-derived mesenchymal stem cells (UC-MSCs) and mononuclear cells from cord blood (CB-MNCs) because of their ample availability[2, 3]. However, there are still many problems on their applications, for instance, it is unclear which types of cells is more effective for HIE? Methods: HIBD was produced using Rice-Vannucci method postnatal day 7 (P7) rats[4]. Briefly, after a 30min rest, the rats were exposed to a hypoxic environment of 8% at 37□ for 2 hours. 24 hours later, UC-MSCs and UCB-MNCs labeled with PKH26 and Hu-Nu respectively were transplanted into the lateral ventricle of rats. A control group underwent ligation of the left carotid artery and hypoxia in the same manner,but received an equivalent volume of PBS alone. The sham group underwent neither left carotid artery ligation nor hypoxia. At 24 h after transplantation, the number of apoptotic cells was detected by TUNEL. We monitor the migration of transplanted cells, and the expression of myelin basic protein (MBP) and glial fibrillary acidic protein (GFAP) at 2 weeks post-transplantation respectively. The Morris water maze was used to assess animal learning abilities at 3 weeks post-transplantation. Results: On the three day after transplantation, UC-MSCs and CB-MNCs were mainly located in cerebral cortex and corpus callosum around the hypoxic-ischemic region of the ipsilateral hemisphere. However hardly any labeled cells were found after 2 weeks post-transplantation. Treatment with UC-MSCs and CB-MNCs did not affect cortical neuronal apoptosis, but was associated with reduced neuronal apoptosis in the striatum on the second day after HIBD ($P<0.05$). After 2 weeks post-transplantation, compared to the sham group, levels of GFAP labeling in control group were upregulated significantly in the cerebral cortex and striatum ($P<0.05$). CB-MNCs inhibited up-regulation of GFAP in the striatum ($P<0.05$), while UC-MSCs inhibited this in both the striatum ($P<0.01$) and the cortex ($P<0.05$). When compared to the control group, MBP expression levels in the CB-MNCs group were upregulated in the cerebral cortex and corpus callosum ($P<0.05$). However, there were no significant differences between the UC-MSCs group and the control group ($P>0.05$). The rats in the transplanted groups showed significant improvement in escape latency to find the submerged platform than those of rats in the control group ($P<0.01$), repeated measures ANOVA). In the probe trial, control rats exhibited significant spatial memory deficits. A one-way ANOVA revealed that the number of times animals crossed the platform location decreased in the control and transplanted groups below sham group levels, though the transplanted group animals crossed more than the control group animals ($P<0.05$). Furthermore, there were no statistically significant differences between the transplanted groups across either stage of testing (training trials or probe trial) ($P>0.05$). Conclusions: Both UC-MSCs and CB-MNCs could have a beneficial effect on recovery of neurological function in HIBD rats, although the possible mechanisms may be different between the two groups. Our data suggest that UC-MSCs and CB-MNCs could serve as a potential approach for the treatment of neonatal HIE and develop a guidance in clinical cellular therapeutics.

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Comparing low field (Innervision) and high field (GE) dedicated Neonatal MRI systems

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MRI is an amazing technology for diagnosis, especially for the central nervous system, but is yet under-used for imaging neonates. This is mainly due to the problems of transporting the neonate from the caring environment of the Neonatal Intensive Care Unit to the MRI unit. This is often a long journey in many hospitals and may even necessitate an ambulance transfer, creating many logistical difficulties. We have extensive experience of imaging neonates with MRI units located within the neonatal intensive care unit (NICU). The first system was a specialised low field (0.2T) MRI system using a permanent magnet which featured safe operation with low acoustic noise and specific absorption rate (SAR) for radiofrequency. Over 1000 babies were safely scanned using this system providing an initial diagnosis, often within hours of birth, allowing improved prognosis and treatment options to the neonatal clinicians and timely information for the parents. The system was installed in a space of 2m x 1m and only required a single mains outlet. However, the image quality associated with low field imaging is not competitive with the latest generation high field superconducting magnet systems. To this end, we have worked extensively with the MRI manufacturer GE Healthcare to develop a compact 3T MRI system and a system has now been installed in the NICU for over 2-years for clinical evaluation. Image quality and operational issues associated with the two systems will be contrasted and compared. In addition, initial concepts for a new, cost-effective neonatal MRI system will be presented.

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