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Supervisor: Dr. Raza M.D. Director of MDS center, Columbia University

Course Title: MDS elective

Medical Elective (SSC 5c)

I was privileged to carry out my elective at the New York Presbyterian hospital under the supervision of Dr. Raza M.D. who, with her team, specialize in the research and treatment of myelodysplastic syndrome (MDS). Uniquely, Dr. Raza and her team conduct extensive laboratory research from a large population of MDS patients across the United States of America. They provide clinics, which allows their patients to be treated in their FDA approved clinical trials based on their laboratory research.

Throughout my placement at the MDS center I have understood more about the disease and the importance of the work that it done there. MDS is a bone marrow disorder originating from a single stem cell. This stem cell produces blood cells which have little to no function and therefore crowd the bone marrow and die prematurely. This can result in the reduction of blood cells in circulation and lead to a pancytopenia, with low hemoglobin, white blood cells and platelets. Negative feedback mechanisms will then stimulate the bone to produce more of these defective blood cells from the defected stem cell leading to the disease MDS. Other conditions which come under the umbrella of bone marrow disorders include, myeloproliferative syndrome where the defective cells over crowd the bone marrow and do not commit apoptosis as readily. Myelofibrosis is another bone marrow disorder seen at the MDS center where the bone marrow fills with fibrous tissue. These bone marrow disorders can be thought of as being a pre-malignant condition with the potential to transform in to acute leukemia. During the elective I have realized the importance of understanding the disease process through laboratory based research. This enables the production of treatment specifically designed for targeting the defected area in the pathway to producing blood cells.

During my time on this elective I have been able to attend the clinics where I have observed the patient consultations. I have also been able to take histories, examine and present my findings to Dr. Raza. I have found that the consultation period with the patient is very important in establishing a rapport and taking a thorough history. A rapport enables the patient to gain the doctors trust and confidence in what maybe a long term working relationship with them. The history also provides valuable information about whether or not the patient has been exposed to toxic chemicals, particularly benzene which is a strong risk factor for the development of MDS. I found that the consultation also provides time for patient education which a vital part of their care. It was important to inform the patients that although their white cell count was low they were not more susceptible to infections, and also for those patients with chronic MDS with low platelets, there was no need to transfuse them with platelets regularly. Those patients with platelets persistently hovering between 10-30 are stable, and transfusing these patients regularly would only increase antibodies against them. This then makes subsequent transfusions increasingly ineffective for when they really do require them i.e. before a dental procedure. These were just some of the interesting points mentioned in the

consultations, which I was also learning with the patient.

I found the strategy for treating patients with MDS novel, particularly as there were several trials being conducted with in this team of oncologists, designed and based upon the laboratory research conducted at Dr. Raza's laboratory. When the patient is considered for the one of the research trial they have a bone marrow aspirate and biopsy. This allows an extensive molecular and genetic work up of the individual to determine particular cytogenetics and chromosomal abnormalities that can guide their treatment and prognosis. Also the International Prognostic Scoring System IPSS enables the patient to be considered as high, intermediate and low risk of developing acute leukemia from MDS which determines which treatment should be given and at which point treatment will begin. The symptoms that the patient is experiencing and also the requirements for blood transfusions however, remain the most important factor in the decision to treat. The approach in this MDS centre was to only intervene when absolutely necessary, such as when the patient was symptomatic and required blood transfusions often enough to impact on the quality of life.

Whilst I was on this elective I was able to observe several bone marrow aspirations and biopsy, performed skillfully in the clinic. The patients not only consent to the standard Bone marrow work up, but also they allow there bone and bone marrow to be analyzed in detail for participation in the clinical trials and form part of the one of the largest banks of bone marrow from patient's with MDS. I was also able to practice my examination and presentation skills. I carried out a focus general examination of patients. Also it was important to organize my history taking to provide a relevant presentation and convey the necessary information across to the doctors i.e. Number and frequency of blood transfusion, disease and treatment time line and also previous toxic chemical exposure e.g. gasoline/benzene. This is something I will take on board when I begin my first placement as a foundation doctor, by establishing the positive findings and the relevant negative for the particular field of medicine I will be working in.

I have very much enjoyed my time at the New York Presbyterian Hospital and felt involved with the whole team. I was able to raise questions in meetings and talk about the interesting advances in oncology. I have left this placement feeling truly positive about the research and treatment of patients with MDS and also acute myelogenous leukemia and particularly impressed with the work conducted in this MDS center. I think oncology is a fast paced and exciting area of medicine for which I am developing a great interest in. On my return to London I hope to take with me the the attitudes and the concept of patient care I have learnt from all the team members here, and use this to better my practice as a doctor.