TWO RESIDENTS PERFORM GROUNDBREAKING RESEARCH

Introducing research methodology into the neurosurgical training program is a focus of the curriculum in the Henry Ford Department of Neurosurgery.

The outcome of this strategy has featured a tremendous increase in the number of resident publications from the department, as well as regional and national awards for the research work and the residents themselves. Not only does this provide research design, implementation and documentation in the form of manuscript experience and increased knowledge and exposure to details of neurosurgical treatment to the trainees, it also opens new areas of research within the neurosurgical community at large.

Two Henry Ford residents, Dr. Lara Massie (PGY-7) and Dr. Hesham Zakaria (PGY-6), have explored and provided groundbreaking research in the fields of anatomical variations in human anatomy that may predict the propensity for certain outcomes – desirable and undesirable – in patients presenting for neurosurgical treatments.

BREAST SIZE AND SPINAL OUTCOMES

Dr. Massie's area of interest is in the field of female breast size as an indicator of outcomes in spinal surgery. For plastic surgeons whose patients are seeking breast reduction, one of the key indicators for that surgery is spinal pain. According to Dr. Massie and her co-investigators, "In female patients undergoing spine surgery, the impact of body habitus on outcome is an underappreciated factor and one that appears to influence patient satisfaction significantly. In the setting of legitimate spinal pathology, female patients with macromastia are significantly less likely to reach a minimal clinically important difference in their disability than their peers, despite having an equivalent preoperative level of disability. Furthermore, musculoskeletal back pain related to macromastia is a well-established finding, and patients with back pain without surgical spinal pathology may benefit from referral to physiatry or plastic surgery for consideration of reductive mammoplasty."

"Simply asking patients to report their bra cup size on intake forms may be a reliable indicator of breast volume, making identification of those who may qualify for reductive mammoplasty (D cup and above) identifiable to spine surgeons without significantly adding to visit time or provider discomfort. These findings could be a point of discussion for any spine surgeon offering surgery to female patients."

PSOAS MUSCLE SIZE AND SPINAL CANCER

Dr. Zakaria has looked extensively into the relationship between the size – usually reduced – of the psoas muscle around the spines of patients with various kinds of spinal cancer. This decreased size of the muscle tissue is referred to as "sarcopenia," and has been explored in other areas of medicine, but not previously in spinal-related disease. In the era of precision medicine, there has been a concerted effort to establish predictors of outcomes in clinical patients, leading to the establishment of risk calculators, many of which are not applicable to neurological surgery. Currently, most neurosurgeons rely on intuition, or the "eyeball" test, where they look at patients to determine fitness for surgery.

Dr. Zakaria and colleagues were interested in assessing whether they could identify a more objective way of determining patient likelihood for desired outcomes with surgery. Recent studies have shown that patient frailty (i.e., lack of resistance to physiologic stressors) is one of the key markers predicting lack of surgical success and is strongly associated with lack of muscle mass (i.e., sarcopenia).

In patients with spine metastases, Dr. Zakaria showed that sarcopenia is able to predict overall survival more strongly than current means. Further, he and his colleagues applied this method to patients with glioblastoma and were able to show that it was again a simple, preoperative and independent predictor of survival.

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