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ANDREA VICINI S.J., M.D., is an associate professor of moral theology and bioethics at the Faculty of Theology of Southern Italy: S. Luigi (Naples, Italy) and a visiting professor of theology at Boston College. He spoke with Boisi Center associate director **Erik Owens** before his presentation on new imaging technologies at the end of life.

OWENS: Your talk today is about new imaging technologies, especially at the end of life, and the ethical challenges that arise from them. In your opinion, what are the new technologies that have changed our understanding of end-of-life care?

VICINI: In particular, fMRI—functional magnetic resonance imaging—is a technique that allows us to see a response when we stimulate the person. When researchers talk to or present images to the person, we can see an activation of a particular area in the brain. The brain responds with an increased vascularization, or blood flow. Scientists noticed that, in some patients who were considered to be in a vegetative state, sometimes it was possible to recognize some level of interaction with the surrounding environment. Some of these patients recuperated consciousness. Hence, they were considered in a minimally conscious state. With fMRI, it seems possible to identify patients who appeared to be in a vegetative state, but, in reality, are minimally conscious, despite the absence of reactions at the bedside. In these patients, fMRI results indicate the same kind of response that is found in patients who are perfectly healthy, control patients.

From the distinction between a vegetative state and a minimally conscious state, and the use of fMRI, we expect that it will be possible to have better indications concerning the patients' recovery and the therapy that we can provide to stimulate them and help in their recovery.

OWENS: So fMRIs are measuring blood flow as opposed to neural activity?

VICINI: Yes, exactly. The classical exam that we have to measure electric activity in the brain, neural activity, is the electroencephalogram, but it does not measure blood flow. In the future, hopefully, we will be able to combine the data that we get from the two techniques. Such a combination would give us a better understanding of what is happening in our brain at a specific moment. We are not there yet. We do not currently possess this ability to define what is happening in the moment.

A further difficulty that researchers are facing today concerns the elaboration and correction of the data that are gathered with fMRI. For example, they need to eliminate the random noise that is connected with the brain stimulation and thus filter the data. Such filtering allows neurologists to interpret and compare what is noticed in a person in vegetative or minimally conscious state to a person who is healthy.

OWENS: What are some of the central ethical issues involved around end-of-life care in general?

VICINI: One of the ethical issues concerns how we gain a better understanding of these patients' situation and, consequently, make decisions concerning their daily care. This involves deciding between continuing therapy or withdrawing therapy, or withholding therapy and life support. Neurologists could help us to accurately define consciousness in these patients, and thus make better decisions. If we find a way in which we can communicate with these patients by using these technologies, we can involve them in the decisions that concern their care.

OWENS: So consent must be one of the core features here, in addition to knowledge about their state?

VICINI: Exactly. If we can find an alternative way to establish communication with a patient, as we are currently unable to do at the bedside in the case of patients in vegetative state, then, first, clinicians can identify among them, those patients who are actually in a minimally conscious state and not in a vegetative state. Second, practitioners can make better decisions because they interact with the patients. In this way, they would be asking their patients what they want. However, this goal is still far-fetched. Recent studies are trying to clarify whether we have the technology that would allow for this type of interaction.

OWENS: Are these developments suggesting that more people have a hope of recovery from these brain conditions than previously thought, or is that still undetermined?

VICINI: It is still undetermined, as this technology is still being developed. As ethicists and citizens, we also need to be critical of the technology itself (i.e., fMRI) because it does not yet provide us with definitive information, as there are a high number of false negatives and false positives.

OWENS: So as a theologian, what spiritual resources do you see Christianity, and Christian theology in particular, offering a patient's family as they consider the appropriate course in end-of-life care situations?

VICINI: First, we can find in our tradition a critical understanding of what technology can offer us. Our tradition tells us to carefully assess technological criteria, while integrating this knowledge with more relational criteria. The whole Christian tradition concerning health care stresses the need to interact with the patient, the family, and the context where the patient is located. The Christian tradition always integrates any concern for the patient with issues that relate to health care in general, in terms of justice to society and the type and quality of healthcare that we provide.

In addition, in this area, it seems to me that our tradition gives us insights concerning the understanding of our consciousness and of our identity by highlighting that we are relational persons, not isolated individuals. One's consciousness and identity are strengthened by caring relationships.

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So consciousness, identity and care can be explored in light of our tradition of caring for the patients, in reflecting on the patient without focusing merely on scientific or technological criteria, and in understanding the patient's identity as part of a network of relationships.

OWENS: One tension today seems to be between an understanding of the end of life as a decision to be made—about euthanasia or withdrawing care, for example—as opposed to the end of life as a process that unfolds. What resources does the Catholic Church offer that help us think about this context? You have spoken eloquently about relationality, justice, and counseling families, but is there a core message about maintaining life itself that comes into play here?

VICINI: The Christian tradition, and the Catholic tradition in particular, has been always very careful in reflecting on end-of-life issues and understanding the end of life as a process. It also tries to provide criteria to help individuals facing decisions that need to be made at the end of their lives. The development of technologies for life support has challenged and introduced complexity into the decision-making process.

In our tradition, we find criteria that concern the assessment of the patient's situation. Also, John Paul II, in reflecting on these issues, indicated that we should always consider the situation of the patient within the context of the family. If the treatments that we provide to the patient who is dying are too burdensome, are disproportionate, are dangerous, or are extraordinary, official Catholic teaching says the patient needs to evaluate the benefits of such treatment, and even consider how it is burdensome for the family. However, this does not mean that we abandon the person who needs care. Instead, it asks us to understand the complexity of discerning the situation, the person, and the expectations that we have in terms of recovery of consciousness, of identity, and of care. It also acknowledges the option to not continue to provide treatment.

We should continue to discern the patient's situation and verify what decision conforms to the patient's wishes in a particular situation. While we can say that life is a good that needs to be protected and preserved, it is not an absolute good. So discernment is required concerning the treatments and the decision-making process at the end of life.

OWENS: I think that among the general population, there is a big question about what might be called quality of life

for people in minimally consciousness or vegetative states. How do you factor the concept of quality of life into this decision, or perhaps, add in a question of meaningfulness of life versus quality of life?

VICINI: Of course we need to reflect on the patient's quality of life. In our tradition, quality of life is not a separate criterion from other criteria that we should consider. We should always respect life and human dignity and reflect on the possible tensions there are between quality of life, the patients' desires, and the possibilities of helping the patients to achieve the quality of life that they want and desire.

Usually, or more commonly, we find arguments focusing on the quality of life in respect to euthanasia. In these cases, often it is because the quality of life is not considered sufficient that the thought of ending one's life arises. From the point of view of official Catholic teaching, this is highly problematic, because it goes against our understanding of life as a gift that is given to us by God. Ethically, we should highlight the need to help these persons in the difficulty and suffering that they are enduring. Quality of life is a relevant criterion, but it is not the sole criterion used to reflect on what the person wants and what we want for the person.

OWENS: You are a medical doctor in addition to being a doctor of the Church [i.e., a theologian], if you will. How has your medical training influenced your theological thinking in this area?

VICINI: I think it has influenced me first of all in terms of the experience of caring for and helping patients and their families. Secondly, it helped me interacting with medical professionals by understanding what they are experiencing and trying to continue to learn from them. This includes the difficulties that they face and how they try to deal with the mission of caring for people and promoting health in society in the current health care system in every country in the world.

As a theologian I want to continue to listen and to understand to what society and health care sciences are proposing to us, even in the case of specific issues within health care. In a way, my medical training invites me to reflect theologically, always aiming at grasping in the best possible way what is really happening in today's world. Finally, it helps me to speak the language of persons who are working in the field.

OWENS: Have you found that your theological training and your current work as a theologian scares away doctors when you are talking to them about this? Have you been able to talk with physicians and scientists as well about the ethical issues, or are they not open to that at this point in the development of this technology?

VICINI: I get the impression that more and more there is a willingness to reflect on ethical issues within the medical field, or among researchers in other sciences. In science, in general, there is willingness because there is awareness that there are concrete problems that raise ethical concerns. Hence, these ethical concerns need to be addressed in medical practice in general and, in particular, in reflecting on new technologies or using new technologies. So there is a greater awareness in the scientific field and among researchers and practitioners that they need to reflect on and address ethical issues.

It also seems to me that doctors have asked ethicists to be interlocutors in the conversation regarding ethical issues. If they find that we are knowledgeable, ready to learn, and that we want to interact in a positive way, the conversation is easier, the dialogue is deeper and there is less friction and tension.

Of course, differences and probably contrasts will surface, and I think we probably cannot avoid that ultimately. But, hopefully, we will be part of a positive relational context, where we can interact meaningfully, talk to one another by appreciating each other's work, and address ethical issues together.

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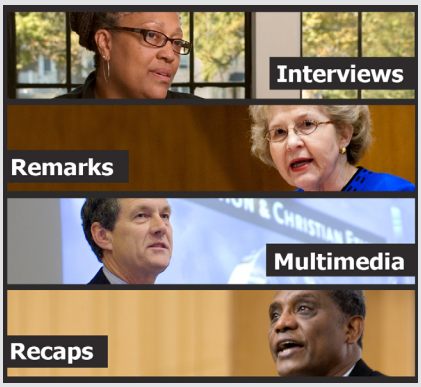

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