AISP - 29th National Congress. Bologna (Italy). September 15-17, 2005.

What is the Role of Pancreas Units Today?

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Summary

The study of pancreatic diseases requires specific knowledge and experience. There are many reasons for the need of a specific approach: pancreatic diseases are rare, their clinical presentation is often misleading, diagnostic investigations pose many challenges and pancreatic surgery is very complex. Due to these characteristics, it is difficult for а physician who only occasionally deals with a pancreatic disease to correctly manage it. For example, it is not sufficient to make a diagnosis of "pancreatic tumor", because we have to precisely define its extension and its relationship with the vessels, to recognize rare surrounding histological different types from adenocarcinoma, to have a "pancreatic" surgical experience to lessen the risk of serious surgical complications. On the other hand, several reports have shown that pancreatic resections have lower mortality rates and better long-term outcomes if carried out in Centers with a high caseload of patients. These considerations support the creation of Pancreas Units, not mere highvolume Departments specialized in pancreatic diseases, but multidisciplinary teams (composed of surgeons, oncologists. gastroenterologists, pathologists, radiologists, radiotherapists and different types of researchers) devoted to all aspects (etiology, pathogenesis, diagnosis, treatment) of pancreatic diseases. We think that the adoption of a Pancreas Unit model could represent the right answer to the recent changes observed in Medicine and could offer a better approach to patients with pancreatic diseases.

In recent years, we have observed profound changes in Medicine which is now significantly different from the Medicine we knew in the last century. This development has involved different fields; technology has improved with amazing speed involving advances in imaging techniques, minimal access operations, endoscopy, catheter-based therapies, laser, information technology and computer-based surgery. The basic sciences have also achieved spectacular innovations in molecular biology, molecular genetics and pharmacogenetics. The changes in Medicine have not only involved the expansion of knowledge; however, the rapid advances in medical technology have increased the complexity of surgical, interventional and intensive care, and have led to an intense development of specializations and subspecializations. Moreover, patients have also the advent of the Internet, changed: teleconferencing and e-mail has dramatically improved the speed and the quality of worldwide communications; as а consequence, the increasingly well-informed patients now play a more dominant role in their own care.

Due to this technology and the expansion of knowledge, strong specializations and subspecializations and a different patient attitude,

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health care has shifted from being specialtybased to being disease/diagnosis-based; patients will expect to be cared for in an environment based on a multidisciplinary approach rather than on the method of treatment.

The traditional clinical organization, based on Departments, does not seem to be fully adequate for meeting the new needs of this world of quickly changing Medicine. In fact, the traditional organization represents a vertical, structural and rigid model. We need a different model; we need a multidisciplinary approach in order to optimize diagnosis and treatment decision-making. We think that the choice of functional Departments, constructed on Disease Units, could represent the right answer to the changes we have described. In fact, functional Departments represent a model for organization which is horizontal and not vertical, functional and not structural, flexible and not rigid: the characteristics are closer to the recent advances in health care delivery.

Disease Units are monothematic units devoted to all aspects (etiology, pathogenesis, diagnosis, treatment) of a disease. Disease Units bring all the laboratory and clinical researchers focused on a single disease together in periodic meetings. Scientific and clinical exchange of information occurs between basic investigators and clinicians in order to create a flow of information "from the laboratory to the bedside" and *vice versa*.

Possible fields of application of Disease Units are represented by complex diseases like hematological malignancies, breast diseases, pulmonary neoplasms and pancreatic diseases. In particular, pancreatic diseases represent an interesting model for Disease Units. They are quite rare often complex and pose a challenge for diagnostic investigations and therapeutic choices; every aspect of pancreatology needs a specific approach. But what are the advantages of choosing a model based on Disease Units? First of all, there are advantages for the patients. We can reasonably obtain earlier diagnoses; patients are more conscious of being involved in

clinical research programs and are able to receive correct information. Α multidisciplinary approach is expected to offer a better quality of life as far as nutrition, pain control, etc. is concerned and most importantly, patients are always taken care of by the same team, with a clear improvement in the relationship between physicians and patients. Then there are the advantages for research. It is easier to recruit large numbers of patients for clinical studies and there are better relationships between basic research and clinical work in order to create true "translational medicine". Finally, there are also advantages for the Institute. There is cooperation better between physicians belonging to different areas of specialization; the definition of diagnostic and therapeutic protocols for specific diseases, to be applied in all Institutes; the improvement of scientific activity and the production of papers and advantages in the recruitment of financial funds and attracting patients.

Organization by Disease Units is not to be confused with а simple high-volume Department. The advantages of high-volume are well-known: hospitals there is considerable evidence that patients undergoing high-risk surgical procedures or complex treatments have lower mortality rates and otherwise better outcomes if care is provided in Centers with a high caseload of patients having the same condition than if care is provided by hospitals with a low caseload of such patients. Hospital organized by Disease Units have the same advantages as high-volume hospitals but they also have the advantage of a multidisciplinary approach.

Organization by Disease Units could find a useful application in pancreatic diseases. In this case, we would have a Pancreas Unit, a multidisciplinary team with surgeons, oncologists, gastroenterologists, pathologists, radiologists, radiotherapists, nuclear medicine physicians and different types of researchers. Whereas many reports deal with high-volume Pancreatic Centers all over the world, very few experiences with Pancreas Units are reported and they are all in the United States,

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such as the MD Anderson Cancer Center and the UC Pancreatic Disease Center of Cincinnati.

A Pancreas Unit was established at the San Raffaele Hospital in Milan in 2002, thanks to the activity of a young researcher, Dr Paolo Dellabona, who chaired the Pancreas Unit until one year ago when it was turned over to a clinician, Professor Valerio Di Carlo. The activity of this Pancreas Unit includes scheduled meetings for an exchange of information, the definition of diagnostictherapeutic protocols and the coordination of basic and clinical research programs.

Several research projects are currently ongoing thanks to the Pancreas Unit activity. As far as diagnosis is concerned, the following studies are under investigation: pancreatic cancer diagnosis by Mn-based magnetic resonance, comparison between multislice CT and echoendoscopy, the role of optical coherence tomography (OCT) and the role of PET combined with growth tumor markers. Among the therapeutic protocols, we are dealing with studies on new chemotherapeutic regimens in the treatment of pancreatic cancer, the application of tomotherapy, the development of active immunotherapy based on dendritic autologous cells and natural peptides derived from allogenic tumor cells. Several projects involve the basic sciences: the characterization of genetic lesions in familial pancreatic cancer, the investigation of relationships between ductal pancreatic cells and malignant transformation and the role of interaction

between stroma and tumor cells in pancreatic cancer growth.

We think that all the clinical and scientific activities of our Pancreas Unit will help us to improve our knowledge of pancreatic diseases, to devise new therapeutic strategies, to improve our clinical results and to offer a better approach to patients with pancreatic diseases. It is important that scientific organizations (both national and international) recognize the existence and the role of Pancreas Units; we hope that, in the near future, many other Pancreas Units will be established in different Centers, and that we will be able to create a strong network between them.

Keywords Hospital Units; Pancreatic Diseases; Pancreatic Neoplasms; Pancreatitis, Acute Necrotizing; Therapeutic Human Experimentation

Abbreviations OCT: optical coherence tomography

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