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Use of human tissues for research

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COMMENT

Use of human tissues for research: Ethical concerns

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Human tissues have always been used in medical institutions for research and teaching purposes. Until recently research and teaching were considered "altruistic" activities, and research projects at most passed through an institutional ethical clearance. However, with the growing biomedical industry, there has been a sudden increase in requirement for human tissues, both fresh and archival, for research, validation and even commercial purposes. We pathologists, as facilitators of this process, need to equip ourselves adequately to deal with the ethical and legal implications of using tissues. We must not only comply with good ethical practice, but also resist unnecessary restrictions that will hamper teaching and research. The purpose of this short review is to understand the ethical arguments behind the use of human tissues in research.

Given a background of increasing interest in human tissues and increasing public awareness, we must pay attention to certain issues that were taken for granted until now. Such as, should patients be made aware of how their tissues are handled and disposed of after every surgery, minor and major? Should they be made aware that tissues that are in "surplus" may be used for research, teaching or quality control procedures? Should all research projects that use human tissue be considered and approved by a research ethics committee? What are the guidelines for freezing human tissue for research? Is it proper to obtain and freeze tissues *before* a diagnosis is established? In such cases is it not necessary to consider the implications on the adequacy of the final report? What are the ethical considerations when human tissues are being used to make a commercial product such as a tissue microarray?

A few years ago, inappropriate retention of organs after paediatric postmortems in Britain created a huge public outcry and debate, and necessitated the start of a process wherein guidelines were provided by the Royal College of Pathologists to facilitate changes in procedures regarding handling of human biological samples (1). Pathologists suddenly found long-established norms, that were believed to be good practice and were done in good faith, now being branded "unethical". The ultimate aim of these recommendations was to emphasise patients' autonomy and to put in place a system of obtaining explicit consent for the regulated use of their tissues. A proposal to obtain a "generic consent" for use of surplus tissue in laboratory quality control, research and teaching was put forward as a transitional measure. The generic consent was valid for the use of surplus and archival tissue for teaching,

quality control and research, which was ethically acceptable (1). What has followed in the UK is a new human tissue legislation guiding the removal, storage and use of human tissue both from the living and the dead (2, 3). Although this has led to restrictions on the use of all kinds of tissues for teaching and research, it has also generated a discussion among histopathologists on how best these practices can be incorporated into routine practice while preserving the autonomy of patients (4).

In the UK use of human tissues for purposes other than diagnosis will now be governed by two legislations (2, 3). The Human Tissue (Scotland) Act 2006 applies only to tissue from the dead, whereas the Human Tissue Act 2004 encompasses tissue both from the dead and living. Under the latter, the surplus tissue from pathology laboratories can be used for research only when the project has been approved by a ethics review board and the samples are anonymised. In such cases consent is not required. If tissue is obtained from a living patient for the sole purpose of research, then consent is mandatory. Such retrieval of tissue also requires ethics review board clearance from an appropriately constituted board. Consent is not required if tissue from living subjects is being used for clinical audit, education and quality assurance. Interestingly, consent is required for all the purposes if tissue is being obtained from a dead individual (retention of tissues from the dead during postmortems is a sensitive issue in the UK).

Unfortunately for us pathologists in India, there are no guidelines or legislations regarding the use of human tissue in research and in the biomedical industry. The Indian Council of Medical Research (ICMR) guidelines, 2000, broadly cover the categories of evaluation of drugs and diagnostics, epidemiological research, human genetics research, transplantation research and assisted reproductive technology (5). Guidelines regarding use of human tissue obtained in the diagnostic laboratory for research purposes are not dealt with in this document.

Pathology laboratories in India are often approached by the biomedical industry for human tissues. Currently there are no guidelines or legislations governing these requests. This is bound to lead to unacceptable and unethical practices that compromise patient autonomy and care. This is further complicated by the fact that it is unethical to obtain any monetary benefits in exchange for tissues. This also raises

other important aspects regarding intellectual property rights and the profits obtained from selling a commercial product that may result from the tissues. Is it ethical for the medical institute to obtain any share from the benefits accrued from intellectual property in such a situation? Should a system of informed consent from the patient be put in place in this situation? If tissues are being used for making a commercial product such as a tissue microarray (which are often sold to the pharmaceutical industry for drug validation purposes), what ethical procedures should followed be? These and other similar issues should be immediately addressed to ensure that unethical practices do not occur.

There is a general feeling that it is easy to obtain tissues from nursing homes and hospitals in India due to the absence of checks, measures and legislations regarding use of tissues for research and commercial purposes. Often the pathology department is approached by agents from biomedical companies for requests of blocks of common cancers such as those of breast, colon and lung. These requests are put forward under the general category of "research" when actually they may be used for commercial purposes such as constructing tissue microarrays. As pathologists we must be fully aware of the exact purpose for which the tissues are used.

There are a few measures that pathologists can take to ensure that patient autonomy and rights are preserved. For example, it is best practice to obtain explicit consent from the patient before setting aside fresh frozen tissue for the purpose of research. Although a biopsy for diagnosis may be performed in the same sitting, we must remember that the representative tissue may be "lost" in the frozen component, and the biopsy obtained for diagnosis may not reflect the actual pathological process completely. Also, the use of tissue blocks to build commercial tissue arrays must be critically reviewed keeping in mind patient privacy, autonomy and intellectual property rights. These and other similar measures will ensure that patient autonomy and privacy are not compromised in any way, and also that tissues will continue to be used for teaching, audit and quality research in an ethically acceptable manner.

References

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4. Underwood JC. The impact on histopathology practice of new human tissue legislation in the UK. *Histopathology* 2006 Sept;49(3), 221-8.
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