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The role of oncology in the context to gender medicine

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Gender Medicine has established itself across-the-board in all fields of research and academics at medical universities. In many ways Gender Medicine can be seen as a continuation of the Women's Health movement and is now recognized as an absolutely normal medical discipline. National and international societies for Gender Medicine have been founded, annual meetings and scientific congresses are held, and scientific journals are published. Gender Medicine has also been incorporated into the curricula of medical universities in many countries including Austria. Since it is a classical cross-disciplinary domain, Gender Medicine has meanwhile penetrated all fields of medical research. While this statement is definitely true, on closer examination we find grave differences in the number of scientific publications and thus the knowledge available to us in various disciplines.

Cardiology was and undoubtedly still is the medical discipline that has been most thoroughly studied from a Gender Medicine perspective. Cardiology continues to bring forth the largest number of scientific publications on Gender Medicine, and this has been so ever since the 1970s. Consequently, a large body of scientific knowledge has been accumulated in this field [1–3]. There is no aspect of cardiology from basic research to clinical practice that has not been the subject of numerous research projects. For most countries the WHO and national registries provide epidemiological gendered data on cardiovascular diseases and mortalities, and numerous studies of gender differences in symptoms, diagnostic procedures, therapeutic approaches as well as outcome of heart diseases have been published. Differences in female and male access to all these procedures have been described extensively and as a rule were seen to be less than optimal for women [4–8]. Gender-specific differences in medication have been reported not only for cardiovascular diseases but also as a result of different reactions by the female and the male heart conduction system to various medications. A large portion of the Gender Medicine studies of medications were conducted in the fields of cardiology and cardiological side effects [9–12]. All these studies were also published in the mainstream

scientific literature. For example, already in 1991 the “Yentl Syndrome” editorial in the New England Journal of Medicine discussed the differences women and men experience in accessing cardiological examinations and treatment [13]. Since then, cardiology societies have issued gender-specific guidelines on cardiological issues [14].

The main argument for Gender Medicine's overwhelming preoccupation with cardiology was that cardiovascular diseases constitute the prime cause of death in women and men worldwide. This is certainly true. But with cancer as the second leading cause of death, why have the Women's Health movement and Gender Medicine hardly jumped on the oncology bandwagon? Or have they at all? For a long time Women's Health and Gender Medicine focused primarily on breast cancer, with their interest in tumours of the sexual organs such as the prostate, uterus, ovaries, etc. trailing at some distance. Breast health was one of the rallying cries of the Women's Health movement. Heated discussions centered on mammography, self-examination, comprehensive preventive health offers. Discussion continues today in many countries, including Austria, on the subject of age limits and mammography plus supplementary tests. Many scientific studies have also concerned therapy and roused considerable media and public interest on the subject of breast-conserving surgery. Large-scale information campaigns on breast cancer prevention have been conducted. The American Pink Ribbon campaign is only one example and one that has certainly not escaped anyone's attention. In Austria, too, mammography and gynaecological check-ups with Pap smear are established in the preventive medicine program and have good advertising campaigns. There is hardly a woman in Austria who does not know about these preventive medicine offers.

In men, prostate cancer leads the hit list. Even if with considerably less effort on the part of interest groups and health systems, PSA screening has been introduced and is offered. Likewise, smears for the detection of cervical tumours have established themselves in the health systems of very many countries. But here we see the first Gender Medicine problems. While we repeatedly hear about sex differences, and often sex bias, between women and men accessing top cardiological care, and always the message that women do not get a fair shake, the imbalance in information campaigns and prevention programs between breast cancer and prostate

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cancer is never mentioned. And even if they are far less numerous, precisely Gender Medicine should draw more attention to men with breast cancer. This is a group that for all practical purposes goes unmentioned. We know that men develop the same types of breast cancer as women and that men need the same diagnostics and therapy, but here we see an almost reverse Yentl syndrome [15–17]. Studies show that men only seek out therapy in an advanced stage of the disease and also have a poorer outcome [18–21]. A man with breast cancer would seem to run up against similar barriers to state-of-the-art therapy as women with coronary heart disease, hopefully in steadily decreasing numbers.

In addition to cancers of the sexual organs, the massive anti-smoking campaigns conducted by the WHO and subsequently most of its member states also focused on cancer prevention and naturally above all on lung cancer. All WHO statistics showed and continue to show that worldwide more men than women smoke and that more men than women die of lung cancer. But, here too, changes are under way, and Austria is also a country where men still make up the lion's share of smokers, although their numbers are declining, while the percentage of female smokers is steadily increasing. In Austria, lung cancer is still the No. 2 cause of cancer death after breast cancer. A look at the number of female smokers precisely among young people lets us fear for the worst, and from a Gender Medicine perspective we not only see a change in the risk behaviour, namely smoking, but we can also expect a change in the incidence of this cancer. The need for gender-specific preventive measures here is acute.

Oncology is not limited to cancers of the sexual organs. What does Gender Medicine know about other cancers? Still surprisingly little. Even today, more scientific studies are published on cardiological than on oncological subjects. And if we leave out all studies concerning cancers of the sexual organs, the disparity is even greater. What do we really have evidence-based data on? Our epidemiological data are certainly comparable to our cardiological data: we have gendered data for the whole world, for example, from WHO statistics, national statistics, cancer registries, etc. The number of new tumour cases, incidence, prevalence and causes of mortality are accessible. All these statistics clearly show that more men than women die of cancer worldwide and in individual countries. This is true for almost all types of cancer. Moreover, women seem to have the advantages of being less prone to develop tumours and more likely to have a better prognosis. The reasons for this have not been adequately researched, and discussion of the subject can take many approaches. The main question is the effect and benefit of the sexual hormones in the body of a woman and of a man in all of life's phases and their effect on tumour development, tumour progression and even tumour treatments. We need to ask questions about prevention and differences in prevention behaviour. As a rule, women as a group more frequently pick up on preventive medicine offers, as can be seen from Austrian statistics on prevention offers over many years. And the matter of what offers are needed also cannot go undiscussed. Naturally, these issues involve general health behaviour and how to deal with risk factors and exposure, but the question also remains whether diagnostic and therapeutic offers are gender-fair. Above all, there is the question of gender-specific chemotherapies. Numerous studies are still needed, especially on dos-

age of chemotherapies. It would seem that women show more side effects and greater intolerance of chemotherapies, but also better outcome from these treatments. There are still hardly any gender-specific guidelines for chemotherapies, and the question remains to be answered whether calculating chemotherapy according to body surface, which is the current status quo, really accounts for all Gender Medicine differences. There is not a single study that supplies even the least Gender Medicine evidence to support this, but indeed several studies showing that more research into chemotherapy from a gender-specific approach is indispensable [22–26].

All in all, we can indeed state that oncology has arrived in Gender Medicine, but not yet on a large enough scale and it is still not equally represented in all research areas due to the massive focus on breast cancer and the effects of hormones on tumour development, growth and treatment. The focus of the Women's Health movement on breast cancer prevention, treatment and female breast cancer patients is probably at least one of the reasons for this imbalance within Gender Medicine's oncology research efforts. In addition to these often well-researched fields, where further studies are certainly still needed, there is a greater need for basic research. Chemotherapies must undoubtedly receive special emphasis. The burning question here is whether the same substances, and even the same dosages, for women and men are optimal. The formula for calculating body surface, that for the time being is the only means of adapting therapies to gender-specific needs, certainly leaves something to be desired. Much research is still needed here, but also into other clinical questions such as gender-specific differences in symptoms, in accessing medical care, in diagnostic and therapeutic offers, all the way to differences in outcome. Gender Medicine research in the field of oncology will not document sex and gender differences, usually demonstrating women to be at a disadvantage as in cardiology, but will draw a much more sophisticated picture. This, in addition to the long years of focus on breast cancer, is one of the main reasons why research into gender differences in oncology, that has to work from much more subtle and precise hypotheses, is often still in its infancy.

Conflict of interest

The author declared that there is no conflict of interest.

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