Original paper

Where are we with Polish pathology at the turn of the centuries in the light of the Congresses of the Polish Society of Pathologists?

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The aim of this study is to depict the current and past research directions in Polish pathology at the turn of the centuries. The analysis was based on the abstracts of the congresses of the Polish Society of Pathologists organized in 1992-2016 and concerned 1,824 presentations. It has been proven that oncology (1,090 presentations, 59.76%) was the most commonly discussed topic and dominated the dispute. Organ pathology was the area of research covered with over ¼ of all papers (464 presentations, 25.44%), while subsequent topics played a marginal role: *varia* (86 presentations, 4.71%), infectious and parasitic diseases (84 presentations, 4.61%) and toxicopathology (56 presentations, 3.07%). A special, multidisciplinary category of veterinary pathology was particularized (44 presentations, 2.41%). Positive trend was revealed for oncology, while a downward one for the organ pathology, toxicopathology as well as pathology of infectious and parasitic diseases.

Key words: pathology, Polish Society of Pathologists, congresses in Poland.

Introduction

The Polish Society of Pathologists was primarily established in 1925 [1] while the re-establishment of this body after World War II, as the Polish Society of Anatomopathologists in the structure of the Polish Academy of Sciences, took place in 1958 [2]. The society members aiming at broadening knowledge and building scientific co-operation, meet at the congresses, the last, held in Warsaw, 2016, being the 20th Jubilee Congress [3].

The paper evaluates research tendencies in Polish pathology in the years 1992-2016.

Material and methods

Presented study was carried out with the abstracts of nine congresses of the Polish Society of Pathologists which took place in the years 1992-2016 in Poland [3, 4, 5, 6, 7, 8, 9, 10, 11]. The authors evaluated 1,824 presentations. All presentations were divided into six groups: oncology, organ pathology, infectious and parasitic diseases, toxicopathology, veterinary pathology, and the other topics described as *varia*. The obtained results were statistically analysed by estimating the types of scientific abstracts presented. The calculations based on the presentations' themes and taking into consideration temporal vicissitude were performed.

The percentage proportion for each type of presentation and each topic category addressed at nine congresses held within 24 years was valuated. The tendencies or trend lines for the topics by defining the linear regression equation and r-square formula, as well as the level of significance (with Student's t-distribution for independent samples) were set for the investigated parameters. The computation was produced with the Statistica 9 pl StatSoft package [12].

Results

It has been observed that of the 1,824 presentations delivered during the congresses, there is a noticeable difference in the number of abstracts presented in particular year, the most numerous being the 13th congress (Rzeszów, 1995) – 332 presentations [11], while in the 18th congress (Międzyzdroje, 2011) there were only 125 presentations [9]. It should be noted that relations provided in the Polish Journal of Pathology that consisted a basis for the present study differ from year to year. For majority of cases the abstracts are not divided or categorized, only for the last two congresses (Białystok, 2013 and Warsaw, 2016) such classification being provided [3, 10]. In 2013 works were submitted to the following groups: plenary lectures, plenary sessions, scientific-training sessions, presentation sessions, sponsored sessions and poster sessions, while in 2016 subdivided as follows: plenary lectures, plenary sessions, oral reports, video-microscope sessions, sponsored sessions, experts' breakfasts and poster sessions. An impediment to the present research was the absence of the full-text abstracts of forty presentations and in three cases – provision of only framing theme of speech. Irrespective of these factors, the analysis could have been carried out correctly, for each relation described nothing less than a frame topic or area of study concerned.

The topics covered in the abstracts were not evenly represented, with a strong disproportion of issues which is presented on Fig. 1.

According to the analysis performed, oncology, with 1,090 presentations (59.76%), has been the most commonly discussed topic and has firmly dominated the dispute. The areas of interest did not change over time and focused on several major issues. Among them, the analysis of the intestinal tract neoplasia was most common, covering over 16% of oncological papers. Especially the colorectal cancer appeared in a series of ninety-two related oral presentations in subsequent years.

For the single-viscus cancers, the breast cancer was most common, representing nearly 12% of the presented group. Nearly one hundred of presentations concerning on nervous system oncology and on leukaemia, myelopathology and oncology of lymphatic and erythropoetic tissues, together with lungs and

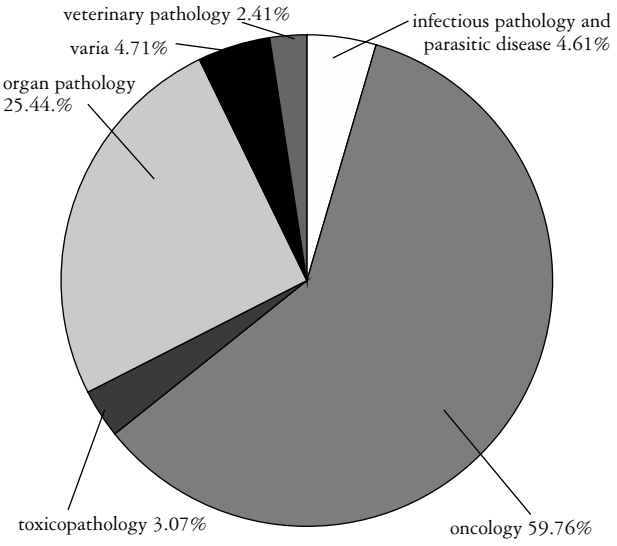


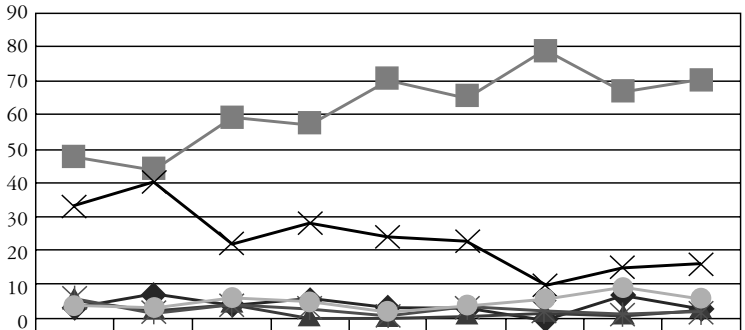
Fig. 1. Subjects of scientific presentations presented during congresses of the Polish Society of Pathologists in the years 1992-2016 in Poland

kidneys tumours, can be observed. Numerous papers have discussed the neoplasm of the male and female reproductive organs and thyroid gland. Fewer papers were dedicated to metastatic changes, liver, larynx, pancreas, skin, bones and articulations, bladder and urinary tract, and salivary glands cancers, particularly the last being of high interest. Not only did researchers discuss the diagnostics and oncological therapy, but also deliberate on the prognostic factors by comparing morphometry, immunohistochemistry and molecular investigation methods. While depicting the growth of neoplastic lesions, the effects of the Chernobyl nuclear accident (April 26th, 1986) were touched on.

Organ pathology was the topic of approximately ¼ of all presentations (464 papers) and included mainly: kidney pathology, cardio-vascular diseases and respiratory system dysfunctions. Cases associated with pathology of liver and intestines, as well as congenital defects and neurological problems were discussed. As in oncology, tendon and skeletal pathology, as well as the pathology of the thyroid gland were other areas of special interest addressed at the congresses. It shall be noted that significant number of presentations touched children illnesses such as congenital diseases, genetic disorders and malformations.

Aside from two pivotal areas of Polish pathologists' interests, the remaining 14% of presentations could be divided into four thematic groups.

Surprisingly few abstracts could have been categorized as the pathology of infectious and parasitic diseases, which was depicted with 84 presentations (4.61%). A significant prevalence of topics in virology has been found for all the congresses apart from



Subject of presentation/year data in percentages	1992	1995	1998	2001	2004	2007	2011	2013	2016
infectious pathology and parasitic disease	3	7	4	6	3	4	0	7	3
oncology	47	44	59	57	70	65	79	67	70
toxicopathology	7	4	5	1	1	1	2	1	3
organ pathology	33	40	22	28	24	23	10	15	16
veterinary pathology	6	2	4	3	0	3	3	1	2
varia	4	3	6	5	2	4	6	9	6

Fig. 2. Trends of the subject of scientific presentations presented during congresses of the Polish Society of Pathologists in the years 1992-2016 in Poland

the 18th congress (Międzyzdroje, 2011), primarily describing various types of viral hepatitis.

Works classified as toxicopathology did not focus much scholars' attention and included only 56 presentations (3.07%). Mainly the negative impact and lesions caused by different toxic substances on kidneys and liver has been reported on at the congresses.

In a scope comparable with the pathology of infectious and parasitic diseases, some abstracts were categorized as *varia*, and this class covered 4.71% of the whole study. As an example of theme the researchers did discuss could serve the usage of computer and the Internet in medicine for collecting data and analysing prognostic factors. Some historical works were also delivered.

Apart from the aforementioned categories, a special, multidisciplinary category of veterinary pathology was particularized, concerning 44 presentations (2.41%). The criterion for concerning an abstract as a veterinary one, was dominating animal characteristics of the presentation or applying the results of studies on animal models for diagnostics and treatment in men. It should be emphasized that a series of abstracts treating on mandibular prostheses in rabbits (to develop a technique of bone reconstruction in men) presents an outstanding research profile continued for decades.

It ought to be noted that, due to the methodology of the present study, some abstracts categorized in one group could also be classified to the other groups of human and veterinary pathology. For example, ten works covering infectious illnesses and three described as toxicopathology touched the neoplastic transformation problem. In scope of veterinary medicine this tendency is even more noticeable, considering the inherent interdisciplinarity of this category. In forty-four abstracts six can be described as oncological and ten as dealing with issues of toxicopathology. This tendency harmonizes with the multidisciplinary trends of the present-day science and nature of medical studies.

The statistical analysis discerned a trend for each of the thematic categories (Fig. 2). The positive trend (increase in the number of presentations) has been observed for oncology. Although a statistical significantly has not been proven in this case, it is worth noting that the trend includes more than 70% of analysed presentations ($R^2 = 0{,}7041$). For the *varia* group, the trend was positive, statistically significant at $p < 0.05$ and related to more than 30% of cases ($R^2 = 0{,}3064$). Negative trends have been reported in infectious and parasitic diseases, organ pathology, toxicopathology and veterinary pathology.

Discussion

The assay of the topics addressed during the congresses of Polish Society of Pathologists held in the years 1992-2016, demonstrates that, regardless the changing number of papers addressed, the areas of studies in Polish pathology does not change significantly throughout the years. There are noticeably visible trends directing the research continue and amplify, as for the progressive growth of interest in oncologic studies. This trend is also noticeable in the world oncology, manifests both in the increase of the incidence of tumours and in the number of publications on this subject [13, 14, 15, 16, 17,

18, 19]. In addition, oncology has also shown great interest in European veterinary medicine, although in this case the growing trend is characterized by organ pathology [20, 21, 22, 23, 24]. A large part of the analysed works in the discussed field referred to case studies, more than twice excessing those presenting statistical analysis. Through the years a tendency can be observed for number of statistical works to decrease, case-study papers going contrariwise.

As there was a high statistically significant trend, it is thus justified to predict that matters of the pathology according to infectious and parasitic diseases will be addressed less often in the forthcoming congresses. It could be also anticipated that the number of themes related as *varia* would be of greater interest in the future.

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