

VETERINARY PATHOLOGY TRENDS IN THE LIGHT OF THE EUROPEAN SOCIETY OF VETERINARY PATHOLOGY CONGRESSES IN 1997–2009

JÓZEF SZAREK¹, MICHAŁ GESEK¹, IZABELLA BABIŃSKA¹, MAGDALENA SZWEDA¹,
MAŁGORZATA SOBCZAK-FILIPIAK²

¹Chair of Pathophysiology, Forensic Veterinary Medicine and Administration, University of Warmia and Mazury in Olsztyn, Olsztyn

²Department of Pathology, Chair of Clinical Science, University of Life Sciences, Warsaw

This paper presents the main trends in the activity of veterinary pathologists in the context of their oral presentations, short speeches and posters during annual congresses of the European Society of Veterinary Pathology (ESVP) in the years 1997 – 2009. During the thirteen analyzed congresses, 2668 presentations were prepared, including 72 plenary lectures, 946 short oral presentations and 1489 posters. Based on the analysis, organ pathology (779 presentations) was the most popular branch of pathology. Infectious and parasitic diseases (714 presentations) and oncology (563) were also quite popular. This paper analyzes also the role of congresses of the Society in disseminating knowledge on veterinary pathology and training pathologists in Europe as well as the trends in their scientific activity.

Key words: European Society of Veterinary Pathology, European College of Veterinary Pathologists, veterinary pathology, congresses in Europe.

Pathology as a scientific discipline was initially developed by individual doctors and later by groups of doctors clustered in scientific institutes and associations [1-4]. The first scientific associations of pathologists on a larger scale were founded in the 18th century [2]. The first European veterinary association dealing with pathology was registered in 1951 in the Federal Republic of Germany under the name of “Arbeitsgemeinschaft für Veterinärpathologien” [5]. Since 1994 this organization has used the English name “European Society of Veterinary Pathology” (ESVP). Currently, it associates close to 600 members, mainly from Europe [6].

The developments in European veterinary pathology are reflected in the subjects of annual congresses of the ESVP. These events are held in different European cities as required by its statutes. They also facilitate the exchange of knowledge, education and integration [7-15]. Plenary lectures (they are often state-of-the-art presentations), short oral presenta-

tions and posters (Fig. 1) are always presented during congresses. By analyzing these scientific materials we can learn about the development direction and focus of veterinary pathology at the turn of the 19th and the 20th centuries.

Based on the scientific material collected from the ESVP congresses held in 1997–2009 [16-28], organ pathology and pathology of infectious and parasitic diseases were the most popular, followed by oncology. Toxicological pathology was of a relatively smaller interest (Fig. 2).

Issues in organ pathology were presented 779 times, which constitutes 29.20% of all presentations. It should be noted that nervous system pathology dominated in this thematic group. This subject was presented in 6 plenary lectures, 103 oral presentations and 97 posters. Organ pathology presentations were relatively frequently enriched by the following issues: polyarteritis nodosa, pancreatitis, chronic nephropathy, osteogenesis imperfecta, endogenous

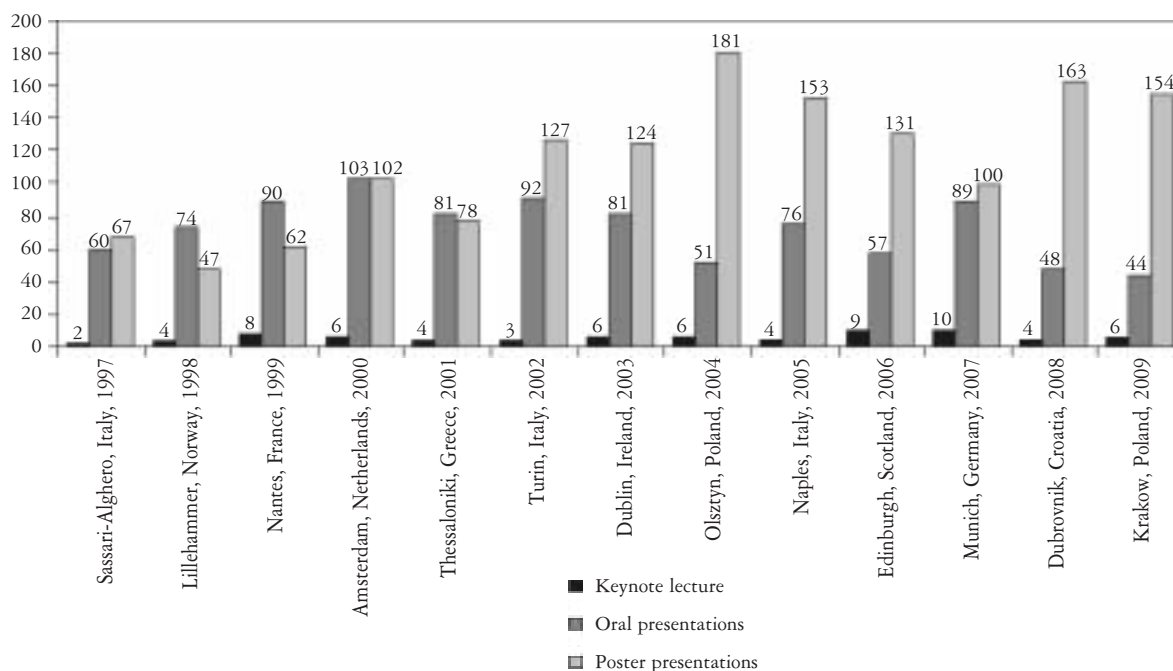


Fig. 1. Annual meetings of the European Society of Veterinary Pathology in 1997–2009 with regard to the number and type of research presentations

lipid pneumonia, placenta abnormalities, prostatic lesions, thyroid and mammary gland alterations.

Pathology of infectious and parasitic diseases gained particular attention during the annual ESVP meetings and was the subject of 714 presentations (26.76% of all the oral and poster presentations). In the ESVP congresses, infectious diseases constituted an extensive scientific discipline, which included molecular biology and immunopathology. The presentations covered, among others, the following issues: highly pathogenic avian influenza in chickens,

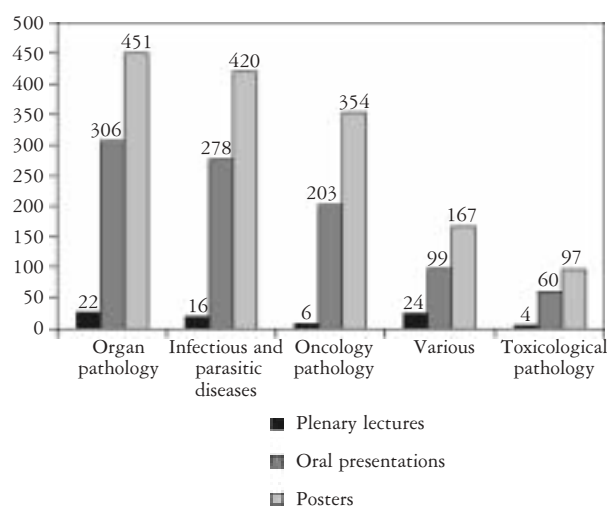


Fig. 2. Number of plenary lectures, oral presentations and posters presented in various research areas of veterinary pathology during annual meetings of the European Society of Veterinary Pathology in 1997–2009

Aujeszky’s disease in pigs, dysentery in pigs, porcine circovirus type 2, bovine tuberculosis and paratuberculosis, equine viral arteritis, infections caused by Chlamydia (e.g. *C. psittaci*, *C. pecorum*) in cattle, feline infectious peritonitis (FIP), feline immunodeficiency virus (FIV), morphological changes in the course of canine distemper virus, bronchitis virus in chicks, changes caused by *Pasteurella multocida* infections and *Helicobacter* in dogs and cats. It should be underlined that in the last twelve-year period, veterinary pathologists devoted considerable efforts to the study of transmissible spongiform encephalopathies (TSE). This was the subject of 33 oral presentations and 52 posters, including 19 which were reported in 2003 in Dublin.

Pathomorphological aspects of parasitic diseases, including coccidiosis, babesiosis, piroplasmiasis, filariasis, echinococcosis, toxoplasmosis and nematodes infection in goats constituted almost 17% of all the presentations.

Issues in oncology were presented 563 times, which constitutes 21.10% of all presentations. Much attention was paid to the problem of lymphomas, mammary tumours in various animals (particularly in dogs and cats), carcinomas and adenocarcinomas, histiocytomas, equine sarcoids and mast cell tumours. The congress presentations extended the knowledge of the participants in the following issues: epitheliotropism and angiogenesis in cases of feline intestinal T-cell lymphoma and T-cell lymphoma in dogs, the correlation of apoptosis and proliferation markers with prognosis in canine mast cell tumours

and the correlation between cell proliferation and angiogenesis in oral canine neoplasms.

Participants in the ESVP meetings also received interesting tumour case reports concerning cerebral leptomeningeal carcinomatosis in dogs, Lafora's bodies in dogs, cerebral granular cell tumour in cats, canine anaplastic large cell lymphoma, liposarcoma in cats, hepatocellular carcinoma and cholangiocellular carcinoma in sheep, salivary duct carcinoma of the mandibular gland in a bardigiano pony, meningioma in dolphins and genital papillomatous lesions in bottlenose dolphins.

Another group of subjects in the presented review can be classified as various issues in pathology. A relatively large number of plenary lectures (24) were devoted to these varied problems. The discussed topics included genomics, transcriptomics, proteomics, metabolomics, molecular techniques such as polymerase chain reaction – PCR (e.g. real-time RT-PCR expression analysis of oestrogen-receptor α , oestrogen-receptor β , progesterone receptor, and ERB-B2/NEU in feline mammary carcinomas) and *in situ* hybridisation – ISH (e.g. detection of *cryptosporidium* sp. in domestic geese by *in situ* hybridization); the subjects of immunopathology (e.g. “Humoral and cellular aspects of mucosal immunopathology”), immunotoxicology, immunohistochemistry (e.g. immunohistochemical detection and distribution of the Vidal GP55 antigen in pigs naturally infected with classical swine fever virus; HPAI H5N1 experimental infection in peckin ducks, based on immunohistochemistry and *in situ* hybridization). In addition, topics concerning apoptosis, transplantology and pathology in transgenic animals were also presented. There was also a very exotic paper presented in Dubrovnik in 2008 entitled: “Whale strandings linked to sonar”.

New diagnostic methods, the monitoring of animal health with the use of pathomorphological tools and experimental pathology were also discussed during plenary lectures.

Lectures confirming the important role of the computer and the Internet in pathomorphological examinations (especially in rapid diagnostics) were not lacking. Telepathology was created thanks to the application of the computer and the Internet and has led to the establishment of international diagnostic centres [29]. In 2005, during a plenary lecture, development of the Pathology Platform was presented based on the centre created at the University of Zürich. This Platform facilitates lectures and serves as a pathology trainer for student self-study and an expert forum for communication. In the same year, standardization of histological evaluation of liver diseases of dogs and cats was presented.

The subjects of accreditation of veterinary diagnostic pathology and teaching standards of patholo-

gy and technical external quality assessment in veterinary pathology were brought up several times. The role of the European College of Veterinary Pathology (ECVP) in maintaining standards of knowledge required from academic teachers was emphasized [30].

While presenting the development of European veterinary pathology, research into transgenic animals should be mentioned. This issue was not very widely discussed in the analyzed period. However, this problem was discussed at a separate session in 2004 during the 22nd ESVP congress in Olsztyn (the first congress to be held in Central Europe). It was opened by a lecture on transgenic animals (“Generation and phenotyping of genetically engineered animals”) and included 7 oral presentations on the same topic. Its plenary session was led by acknowledged specialists in this discipline: professor Achim Gruber (Germany) and Dr Bjorn Rozell (Sweden).

Since 2004, the issues of transgenic animals have been present more frequently during the annual meetings and there has been an increasing number of specialists (including veterinary pathologists) dealing with this topic. Research into transgenic animals fulfils the desire to produce more efficient animals with better immunity to diseases. Poultry immune to salmonellosis and cattle with doubled muscular mass were presented as examples of this type of research. The response of transgenic animals to a wide variety of stimuli was compared to the response expressed by animals of intact genetic material.

Toxicological pathology is another issue covered among the topics discussed at the sessions. It was covered by 97 poster presentations (6.51%) and 64 oral presentations (5.56% of all the plenary lectures and 6.34% of all the short oral presentations). Cases of food poisoning, such as intoxication of fattening pigs with selenium, salt poisoning in sheep, intoxication by herbs (*Naribecium ossifragum* – a perennial herb of the lily family) in ruminants and cadmium poisoning in chicken were discussed. Papers dealing with effect of medication on organ and tissue morphology (a.o. oxytetracycline and lysozyme dimer on hepatocytes in sturgeon, superovulatory drugs PMSG/HCG on the endometrial basal membrane, Dexamethasone on the bovine corpus luteum and on the liver in dogs or Dimethoate and Pyrantel on rat liver) were also presented. Moreover, the aspects of environmental pollution (e.g. pathomorphological patterns of the wide mouse, breeding carp living near a pesticide tomb, chlorine toxicity in rainbow trout and morphometric assessment of canine lung lesions as a monitoring tool for atmospheric pollution) were also presented.

The presented research most frequently concerned farm animals, household and experimental animals and less frequently focused on free-living and exotic

animals. The research into exotic and free-living animals concerned species such as turtles, snakes, dolphins, cetaceans, porpoises, seals, aurochs (European bison), elephants, monkeys, orangutans, iguanas, panthers, lions, antelope, gazelles, lamas (alpaca), bears, foxes, storks, parrots, sea horses, coatis (coatimundi), rhinoceroses (Black rhinoceros) and capybara.

Mystery slide sessions are presented frequently at ESVP meetings and are a very interesting and original form of pathological education and training. They provide opportunities to independently observe microscopic preparations of pathological lesions of rare disease cases and make a diagnosis following a discussion. The subject matter of these sessions varied and, among others, included histopathological diagnostics of skin diseases, pathology of reproductive, digestive and central nervous systems. A comparison of the results of the cytological and the histopathological examinations was made and the clinical pathology was discussed.

While analyzing the topics discussed at the ESVP congresses over the past thirteen years, an increasing trend toward more extensive use of research at the subcellular level and an increased degree of synergy of pathomorphology with clinical pathology can be observed. The organization of congresses in co-operation with the ESVP, the European College of Veterinary Pathologists (ECVP) and the Charles Louis Davis Foundation seems to be the right way to extend the scope of research for both clinicians and pathologists [17]. This trend was also visible at the 2009 congress in Kraków, where the societies of ESVP, ECVP and the Davis Foundation were joined by the International Society of Veterinary Dermatopathology and the Polish Small Animal Veterinary Association [8, 18]. It should be noted that it was in Kraków, where sessions on fish pathology (including issues of rearing, breeding, pathology, toxicology, immunology and infectious diseases in fish) took place.

Dr Sven Bergmann (RFN) presented a keynote lecture concerning viral infections in fish entitled: "Virus Infections of Fish" and professor Trygve T. Poppe (Norway) led a workshop and presented the topic of "Cardiac disease in farmed salmonids".

A state-of-the-art lecture entitled "A comparative approach to metastasis biology and therapy" was presented in Kraków by professor Chand Khanna from the National Cancer Institute (USA) and was awarded an honorary medal by the Journal of Comparative Pathology. The lecturer said, among others, that "...based on the opportunities provided by the completion of the canine genome, the identical biological behaviour of canine and human osteosarcoma, and the increased prevalence and aggressiveness of this disease in dogs, we recently used our cross-

species comparative gene expression approach to uncover specific genes, gene families/functions, or pathways that were conserved across the dog and human and are commonly linked to metastasis" [31]. He also presented a method of osteosarcoma treatment in children.

While carrying out an analysis of European veterinary pathology, it should be mentioned that the first two scientific papers from Poland (from Olsztyn) were presented at the fourteenth ESVP congress in 1996. The activity of Polish veterinary pathologists has increased clearly – in 2009, at the 27th ESVP and ECVP congress, Polish scientists presented 27 papers.

What should be underlined is that thanks to ESVP congresses, veterinary pathologists have developed an interest in telepathology, which could become an indispensable tool facilitating everyday work. Thanks to this tool, as well as to the close contact with other pathologists around the world, it will be easy to participate in training sessions or exchange opinions concerning morphological lesions using so-called "virtual slides" [29]. The new challenges faced by pathologists are increasing the attractiveness of this scientific discipline. An increasing number of cases of infectious diseases and new diseases as well as the rate of their spreading is the reason behind the larger number of pathomorphologists focusing on this field. The following diseases may serve as an example: avian influenza H5N1, swine influenza, blue tongue, PRRSV and classical swine fever. Scientists from all over the world are studying these diseases – especially their pathomorphogenesis – which is also reflected at the ESVP congresses. Both the wide variety of the issues analyzed and their intensity observed at the annual ESVP meetings indicate the high level of veterinary pathology at the beginning of the 21st century as well as the great activity of veterinary pathologists striving for enhancement of animal and human health.

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Address for correspondence

Józef Szarek MD, PhD
 Chair of Pathophysiology, Forensic Veterinary Medicine and Administration
 University of Warmia and Mazury in Olsztyn
 ul. Oczapowskiego 13
 10-719 Olsztyn
 phone/fax +48 89 523 32 52
 e-mail: Szarek@uwm.edu.pl