Analysis of the prevention of travel related illness on the basis of the recent achivements of the travel medicine

PhD thesis

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Budapest

2007

Introduction

Diseases related to journeys and trips have an age equal to mankind's longer displacements, i. e. equal to the history of travels. Settled life was accompanied by the invention of agriculture and the domestication of certain animals that, however, resulted in the appearance of *new pathogenic agents*, whose spreading went ahead with the moving of people and goods. During the discovery of far regions - as happened for military intelligence services or building of commercial roads - certain *new sicknesses* or hurts were observed too.

In our days, after *Cold War* years (1945-1989) ceased, the increase of international tourism - and concommittently a never seen enlargement of the travel insurance market - enhanced the development of a relatively new medical discipline: **travel medicine**. Its appearance was owed to an increasing number of *airplane travels* and the discovery of the Third World as a popular tourism target. The change in the mood of travelling and the acceleration of travels, however, drew the general attention on diseases that were formerly unknown (e. g. the s.c. jet-lag disease).

The becoming more popular of adventure tours, expeditions, humanitarian aid missions and - before all - free time sports had to go hand in hand with the rescue of casualties that mishapped in far regions. Local wars of the 20th and - unfortunately even – 21th centuries caused a massive emigration of some entire people groups. At last, the rescue of travellers from countries affected by Earth’s natural catastrophes needed a lot of very specialized knowledges even within the medical discipline. All these facts and developments mean new challenges for those persons, who deal with travel medicine.

The increasing need for non-infectological travel medicine notions has been facilitated by the **decrease of travel costs** (the appearance of s. c. *wooden bench flights* and *last-minute travels*). These commercial methods involve a very broad field of people (the retired, families with children, the youth) into the general tourism movement. In this way, however, also a population of higher morbidity got between the travellers - an event that especially enhanced the medical study of people having a chronic disease around travel activity, as well as the organizing of abroad care for acute patients[1]. At the

end of the 1990's, travel medicine already was recorded as a new medical discipline. Parallelly to the spreading of this new division of science, the bases for education and the infrastructure for doing travel medicine have been created in developped countries.

In **Hungary**, the disposition and - especially the administrative - possibility to travel at all grew to an unbelievable extent after the chute of socialism (1990). Much later, the date of joining the European Union (May 1st, 2004), the general belief in our country was that the blue *"European Health Insurance Card"* (bearing both the Union Stars and the Hungarian Double Cross) will make all diseases emerged abroad payable. Against this delusion, specialists of the **Hungarian Life Insurance Medical Association** *(in Hungarian: Magyar Életbiztosítási Orvosi Társaság, see the Hungarian language homepage: www.mebot.hu)* spoke from the beginnings[2]. The association accepted travel medicine as a new domain of insurance medicine. Beginning with 2005, a separate Section within the organization deals with traveller insurance and travel medicine. Travel medicine has been taught since 2004 on a post-gradual level, and a first university script concerning this domain appeared in the year 2006[3]. The analysis of travel as a medical problem, the acceptance and the adaptation of international experiences to present Hungarian conditions - as well as the creation of a hygienic travel culture in Hungary - have to be expected[4].

Aims

Among those 17,6 millions (of less than 10 million inhabitants) that travel over the borders (data from 2006) *each Hungarian generation* may be found. But not only persons of the most different ages, even people with the most various health conditions leave their home. However, preparing ourselves for travel and preserving health during it became the task of travel medicine. The application of the material of knowledge may prevent a high degree of morbidity - or at least moderate diseases around travel. Those people that will be involved with an accident or get sick shall obtain a quick medical aid or a return to their original countries (*repatriation*). In order that members of the Hungarian society shall be able to arrive to these advantages, the „*naturalization*" of travel medicine in Hungary proves to be indispensable[5]. It is for this purpose that the aims of our Dissertation were set.

1. Categorization of diseases related to travel and analysis of the prevention possibilities of these disease groups

If considering travel related diseases, there were traditionally diseases of infectological feature that got into the focus. Some other – travel related – diseases are known too, but their discussion has not been performed within the knowledge material of travel medicine. So it became necessary to categorize diseases *around travel* („*peritravel*" diseases) by using a unitarian way of view in order that the assorting of diseases make possible

- the determination of prevention levels of travel medicine and
- the analysis (prophylactic, consultative and curative) methods related to prevention levels of travel medicine *on the one hand,* as well as that of the circle of physicians *on the other hand*.

2. The separation of different prevention levels and their analysis based on the newest scientific and organizational results

If diseases menacing travellers are well known, then the elaboration of curative and prevention methods against them shall become possible too. As travel medicine is considered primarily as a discipline of prevention way of view:

- *primary* prevention domains (travel consultation, vaccination and chemoprophylaxis);
- *secondary* prevention domains (filtering off of chronic diseases and preparation of the travellers for voyage);
- *tertiary* prevention domains (patient care during travel, preparing repatriation and repatriation)

may be differing. As the method of biomedical prophylaxis became a well-developed method in Hungary – a country that possesses a good care network - the thesis deals (within the topic of **prophylaxis**) with medical advice (consultative prophylaxis) by rendering a presentation of its scientific bases and the necessary infrastructure.

3. Partitioning of the various topics of travel medicine

Up-to-date travel medicine developed to a complex science of traveller care. We may divide it into four *subdisciplines* that detach themselves in tasks and tools but have the main activity: the protection of health.

4. Analysis of travel medicine from the point of view of prevention

A representant of the various subdisciplines of travel medicine may often encounter travellers of different ages and diseases or has to procure preparation for travellers having special travel scopes or persuing some sports. According to these needs, prevention domains have to be interpreted in an expanding way.

Different subdisciplines may attend their scopes by different preventional methods. Their analysis, however, failed to be done in special bibliography, so they are waiting for discovery. As the scientific results of travel medicine (being a relatively young subdiscipline) got completed continuously – and it may use the tools of informatics (the only way to reach a broad travelling public) – it can be attended that we not only shall be capable to elaborate prevention methods and tactics within the discipline of travel medicine, but our results may be found usable also by joint professions.

5. Placement of prevention levels and methods in Hungarian health care system

Travel medicine – if compared to other, "classical" medical disciplines – proves to be a very young matter of knowledge. So its results have to appear not only in new and applied therapeutic methods, a deeper discovery of the disease's etiology, but also in the building up of an organizatory and care network of the profession and the shaping of new subdisciplines and interdisciplinary domains as attached to the medical profession.

In Hungary, (because of *science policy* precedents) travel medicine includes larger fields of activity than abroad. So, here we shall have the possibility of a wider, better organized travel medical care. This will be a more urgent task, since the former shape of care (international vaccination places and the National Hygienic Office) shows continuous changes.

For the practical applying of travel medicine's organizational knowledges we first have to adapt the science of travel medicine in Hungary and to instruct specialists of the practical care too. This tasks means the elaboration of the summary of lectures in university and post-graduate education. For the educated specialists a care infrastructure has to be created as well. The elaboration of these topics means one of the scopes of this thesis.

Methods

As we already have mentioned, the prevention activities of travel medicine were not considered as a uniformised one till now. Only partial domains have been analysed, methodologies mentioned. But an unitarian point of view - that could have defined basic notions of travel medicine and would have considered the preparation of travellers as an unitarian "therapeutic chain" -, does fail yet.

1. **It is therefore our first task to categorize notions used in travel medicine in order to obtain a concerned interpretation**. First of all, we have to define, which travels and which travellers belong into the competency of travel medicine. It is necessary to create a categorization of travellers, that shows clearly the health care needs of the prevention's subjects, the health condition of the travellers and the risk factors resulting from this or from the conditions of travel.

2. **We have to regroup those diseases that may be the objects of prevention during travel.** While doing this, the etiology may serve as a guide for their prevention methods and / respectively may point out the level of medical care performing prevention.

3. Concerning **prevention**, it is suitable to make a division that
    - reflects existing prevention tactic in a life-like (realistic) way,
    - embraces both theoretical and practical know-hows and agenda belonging to the tactics and
    - fits with the unitarily accepted prevention terms (primary, secondary, tertiary prevention).

It is necessary to analyse the possibilities provided by a secondary and a tertiary prophylaxis as well as the subjects of prevention. **Repatriation** – a special form of tertiary prophylaxis – has to be detailed separately.

Based on this division, - in the mirror of the newest national and international results of travel medicine - a survey and analysis of various prevention methods become possible.

Our aim is, therefore, not to analyse well known and – from an organizational, scientific and methodological point of view: also in our country – well functioning domains (e. g. vaccination, migration medicine). A focusing on matters *not yet or scarcely mentioned in the Hungarian medical literature* would prove to be more foreshadowing (e g. risk factors of travellers, travel consulting of patients having chronic disease etc.). In the same way, however, - on the domain of secondary and tertiary prevention - we definitely must mention the s. c. *assistance medicine*, a notion quite unknown even abroad, but that was already accepted in Hungarian travel medicine as a subdiscipline of this science branch. It is therefore that the urgency care of travellers and the problems of repatriation has to build up an organic part of our present thesis. The elaboration of these methods occurred mainly in practice, so their review may be interesting even from a point of view of **history of the science.**

4. **The definition of the subdiscipline travel medicine** and of its tasks and methods will be suitable only after the definition of the notions above has been performed.

5. It remains necessary to review all those medical matters of knowledge that serve as a basis even for the **general practitioner** if he wants to deliever useful information and medication. The infrastructure necessary for all that, the personal and material conditions – included the central measures becoming necessary later. As a common regulation of the European Union fails to exist till now (not even on the level of recommendations), we may hope that the already functioning Hungarian model may be usable for other countries too.

Results

Travel medicine introduces itself as a complex discipline that is able to prevent *with success* health injuries that may accompany travel. For this purpose, however, it is necessary to elaborate not only classical **primary** prevention methods (*biomedical prophylaxis*) but also – according the enlarged attitude and tasks of travel medicine – those of **secondary** and **tertiary prevention** based upon the newest scientific results.

On the basis of the methodology created in this way, the placing of travel medicine into the Hungarian medical system will be necessary. Before 2004, travel medicine has had no precedent in our country, but this disadvantage may be counter-balanced by the possibility of educating a Hungarian medical personal and creating infrastructural system of requirements[6].
According to the conditions above, we are able do demonstrate following results:

1. We have defined **the appropriate arrangement in groups of the travellers** that makes possible the determination of risk factors of travellers, the identification of prevention forms suitable for some groups and the definition of the health care level performing prevention.
2. We already have settled **the domain of the diseases possibly accompanying travel** and their modern prevention methods. While considering diseases, we have reviewed not only those traditionally associated to travel *(*jet-lag, motility disease etc.), but also forms scarcely mentioned in speciality literature (as travel psychosis[7]). Into a separate grouping belong diseases accompanied to travel but caused by self-standing pathogenetic factors (as travel diarrhoea) as well as diseases occurring accidentally during travel (as injury) and also diseases that may be aggravated by travelling (cardiac disease, diabetes etc.) In this way methods of prevention became definitive and so did also the circle of health care staff.
3. We have demonstrated that within the matter of travel medicine the triple form of prevention is necessary to be adapted as on the field of other medical disciplines. **So, in the domain of travel medicine both shape and content of primary, secondary and tertiary prevention has been now determined.**
4. We have stated that it is suitable to divide travel medicine into more fields of

speciality in order to fit with the changed travel customs and the changed composition of travelling public. In the meanwhile – on the differing domains – the methods of the applied prevention may be determined more exactly.

5. We also demonstrated that **diseases belonging into the focused circle of travel medicine may be prevented** with success or at least temper their *nocive* action. This will prove to be unconditionally true for primary, secondary and tertiary prevention strategies too.
6. We describe **assistance medicine as a special form of tertiary prevention** in a detailed way. We have analysed methods and importance of patient's *repatriation*, a fact that medical literature failed to pay a suitable attention.
7. We also have determined those **prevention methods and tactics** that proved to be effective: if viewed in the light of the newest results of travel medicine. We called for attention on the possibilities given by informatics in order that prevention activity and basic information can reach a broad layer of the travelling public as possible.
8. We succeeded to define a **possible organization** of travel medicine activity (on a infrastructural and knowledge level) **among Hungarian conditions**. To these we co-ordinated possibilities and tasks of health care levels, physicians and branches. We stated that in the basic care of the travellers general practitioners might play an eminent role, so we could appoint tasks of general practice in travel medicine[8].
9. The organization of university and post-gradual education of travel medicine represents a part and a task of prevention activity. We already have elaborated and applied in practice with success a new, **practice oriented shape of compulsory medical training**[9].

Conclusions

Because of increasing travelling public having a more and more differentiated health condition, travel medicine gets a more and more important role on this special domain of curative and preventive care, as even the notion of travel changed in the meanwhile: besides traditional tourism adventure trips, free time sports appeared. Those who are working abroad for a longer time, immigrants, those whom stay abroad with a special scope (workers of humanitarian aid organizations) may have predominantly health problems as ordinary travellers do[10].

These new conditions may raise new challenges to travel medicine. The division and subdivision into different subdiscipline already has begun, but it is a feature of each subdiscipline that it "thinks" with a multidisciplinary attitude. Moreover, besides the prevention methods that were developed at the ent of the past, 19th century, new ones have to be aligned in order the travel medicine prevention may be reached by every travelling layer of society. This, however, requires the re-definition of human travelling groups, as well as the re-consideration of peritravel diseases and the possibilities of their prevention. The full background of (pre-, under and post-) prevention works, however, only by the creation of the triple level of the prevention itself.

In preventing peritravel diseases we have to adapt not only the primary prevention of mainly infectological consideration (**biomedical prophylaxis**) but also the secondary and tertiary prevention of a multidisciplinary consideration. For these purposes, **assistance medicine** proves to be suitable, that focuses on the training of free-time sportsmen and of those who go to adventure trips: a health care activity that renders attention on the spot and repatriation for those having an accident, so realizing a special shape of a tertiary prevention: the wilderness medicine. Every subdiscipline has to discover suitable prevention methods and special prevention tactics. All knowledge must be used within the borders of a fourth subdiscipline – travel insurance medicine[11] – in order to elaborate an up-to-date, good material protection and an insurance policy giving an immediate medical help for every traveller[12].

However, in order that the applied methods of travel may reach the whole spectrum of

the travelling public, not only physicians dealing with travel medicine, but actors of each branch getting in contact with travellers – and primarily the general practitioners – have to play a role in the prevention of both healthy and sick travellers[13].

It is therefore that the activity of prevention has (1) to create its basis of knowledge, (2) to elaborate the plan for education and training for medical staff rendering prevention and (3) to create the infrastructure of education and doctor-patient meetings. As travel medicine represents a not yet naturalized domain, a special attention has to be paid to the organization of a suitable care and education fitting with Hungarian peculiarities.

However, concerning information and preparation of people for the travel, the new scientific domain requires for new methods, and during education of physicians getting into relation with travelling patients. It is therefore that only a doctor having acquired a practice in travel medicine, a colleague who possesses both practical abilities and up-to-date knowledge, may assure a suitable prevention and therapy.

According to assessments performed in Hungary, 22-27 p.c. of people who want to travel do not venture to travel because of their health condition.

We hope that all that we considered during this thesis would be of use not only for those who deal with medical science but also for everybody who would like to travel at all.

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