International Journal of BioMedicine 4(1) (2014) 51-53

INTERNATIONAL JOURNAL OF BIOMEDICINE

POINT OF VIEW

Stem Properties of Autobacteria

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Abstract

This paper discusses the stem properties of the autobacteria as part of the activation syndrome and persistence of the endogenous microflora in the adaptation process of the macroorganism to stress, as well as the ability of the bacteria to stimulate the cells of the macroorganism to manifest stem properties. The essence of this syndrome involves testing the tissue with the autobacteria of their "host" body to identify the foci of cellular insolvency with the subsequent inclusion of the autostrains in the implementation phase of the catabolic and anabolic inflammations. Considering the genetic tropism of the microbes to the organ-specific tissue of the area affected, the existence of the stem properties of the autobacteria is assumed to be realized in the process of reparative regeneration. The great clinical significance of further study of this phenomenon is not excluded.

Keywords: *stem properties; autobacteria.*

Introduction

Most recently, the latest research done by the biologists and geneticists from Cambridge University revealed the real possibility of transforming the multicellular tissue in unicellular parasites. In the case of Canine Transmissible Venereal Sarcoma (CTVS) the tumor cells were found to implement their "right to self-determination" and returned to their original single-celled existence, i.e. CTVS cells are a clone of the oldest known mammalian cell structures capable of independent existence, although they require constant replanting. The CTVS cells possess between 58 and 64 chromosomes most of which are diploid cells, whereas dog cells have 78 chromosomes with a high proportion of homozygous sections. About 3% of the protein-induced dog cell genes became redundant and were lost for sarcoma cells [1,2].

Researchers from Edinburgh University recently found that certain bacterial pathogens of leprosy, can convert mature human cells into stem cells and reprogram them to transform into cells of another type. On becoming stem cells, they experience "freedom", and can, therefore, move anywhere throughout the body and serve as a transport for the leprosy pathogen cells. For example, in muscle, the stem cell is transformed into a muscle cell. Bacteria also force the stem cells to secrete specific proteins that attract the immune cells, which are also used by the bacteria as transport. Scientists are working towards being able to uncover the secret of how bacteria control our body cells, in order that they might be able to use this knowledge in the treatment of cancer, rehabilitation therapy and solve many other medical problems [3].

Recently some interesting observations were presented by Peter Lockhart, the American scientist-dentist from Carolina Medical Center, Charlotte. He conducted a study involving nearly 300 patients; each of them underwent one of the following three procedures - regular cleaning of the teeth, tooth extraction with prior administration of antibiotics and tooth extraction with a placebo. After the procedures, samples were taken from all the participants of the experiment, to determine the quantity of bacteria present in the blood prior to the procedure, during and after it. The results showed that bacteria are often found in the blood of those subjects whose teeth had been extracted. However, the number of bacteria in the blood of patients who had just brushed the teeth was significantly higher than expected. This implies that the bacteria asymptomatically enter into the bloodstream, many hundreds of times in a year, although the significance of this phenomenon is still not understood [4].

Organ-specific mammalian cells are not always organ

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specific. These cells can become transformed into unicellular individuals; therefore, the unicellular autobacterium is not always the aggressor. Under certain conditions, it can often appear (asymptomatically and transiently) at different levels of the microorganism, showing previously unknown stem properties.

"Autobacterial morphogenesis" of organ-specific cellular structures of the host or the more recent "Stem properties of autobacteria" gives the essence of the events described. Moreover, this process can be implemented in both directions.

Had such works not been presented by scientists from world renowned universities, this phenomenon could be perceived as a kind of morbid fiction. However, studies closely associated with the debated issue were published by Russian scientists even in the middle of the 20th century. In these studies, the biological expediency of the participation of the autobacteria was convincingly demonstrated where they were found to aid in the effective implementation of inflammation by the hematogenous delivery of live microbial cells from the intestinal reservoir in a remote center of cell destruction to enable their participation in the physiological inflammation by providing these microbes with their plastic, enzymatic, energy and anti-inflammatory potential [5,6].

Purpose of the work

In the early '90s of the last century, in the Tyumen State Medical Institute, we conducted a series of experimental studies of this phenomenon. Therefore, if the autobacteria, our "great-grandparents", have a genetic kinship with the organ-specific cells of their "host" (Escherichia coli - kidney, pneumococcus - lung, streptococcus - tonsils, meningococcemia - lining of the brain, etc.) and take an active and direct part in the elimination of the foci of cell (initially aseptic) destruction, then the question that arises is why do they not remain in the former foci but become transformed into a kidney, lung, brain or lymphoid cell?

It is this particular detail that distinguishes our work from that of the earlier studies of I.I. Dolgushina et al., and V.I Nikitenko. First, we tried to identify the autobacterial persistence in the bodies of their "hosts" during the process of the surgical stress and, second, to detect traces of the alleged "reincarnation" [7-10].

Thus, the autobacteria from the intestinal reservoir of the lab white mongrel rats were inoculated onto the nutrient medium containing radionuclide H3–thymidine, which is tropic to the genetic apparatus of the bacterial cell. After one day, the live labeled autobacterial cultures were carefully collected, washed and implanted by microclysters in the natural environment, namely, the intestinal reservoir of their "host". One day later, the rat was operated under general anesthesia. A laparotomy was performed and an injection of small doses of 3% hydrogen peroxide was administered in the renal parenchyma for modeling the aseptic necrosis. The next day, the animal was removed from the experiment with a lethal dose of the soporific. On autoradiograms of the histological material we found that thymidine labeled autobacteria translocated through the intestinal wall into the bloodstream without morphological traces of their destruction (Photo 1). At the same time, a persistence of the labeled autobacteria was observed at all levels of the host organism, including the kidney (Photo 2). Bacteriological studies of the material studied have reported the growth of identical autobacteria in the intestine, blood, urine, and kidney tissue.

Photo 1. *Transport of H3-thymidine labeled autobacteria from the lumen of the colon into the bloodstream of rats after 24 hours of the surgical aggression. (Autoradiography x 70). Own observations.*

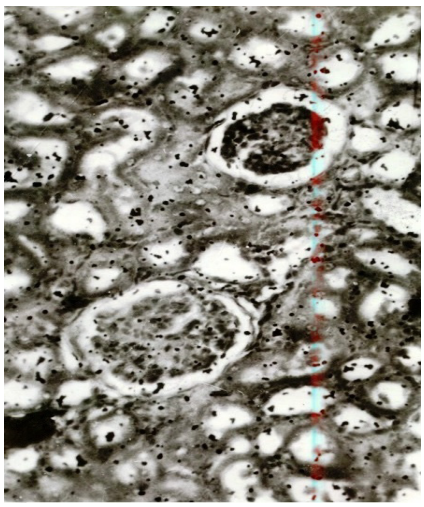

Photo 2. *Tracks of labeled autobacteria in the lumen of glomerular capsule and renal tubules after 24 hours of the surgical aggression (Autoradiography x 280). Own observations.*

We have characterized this phenomenon as a syndrome of activation and persistence of the endogenous microflora during the process of the animal's adaptation to surgical stress. Our data confirmed the results of the research and assumptions of our colleagues in our country. Perhaps, they can answer the question posed by the American dentists today: Why is this phenomenon necessary for the human body? This phenomenon is biologically appropriate and aimed at the detection and indication of the foci of the local cell insolvency that occurs or is expected to occur in the course of external aggression. If it is not present and the patient just

brushes the teeth, then the syndrome is said to be transient and asymptomatic. A physiological tissue test of the macrosystem was done. However, if a tooth is removed and foci of dead cells are formed, or necrosis of the renal tissue is developed after peroxide aggression, then the live autobacteria are hematogenically delivered to the sites of the requirements and they actively become involved in the catabolic phase of the inflammation with all the attendant morphological and clinical consequences.

In continuation of our experiments, a number of animals were subjected to a similar scheme of studies during the period of the anabolic stage of inflammation on 38th day after surgery and peroxide aggression. However, no histological and bacteriological signs of autoinfection were found in the kidney. Interestingly, on performing peroxide aggression, the young regenerating epithelium of the nephrons was observed to contain the labeled gene pool of the earlier-delivered autobacteria in their nuclear structures (Photo 3).

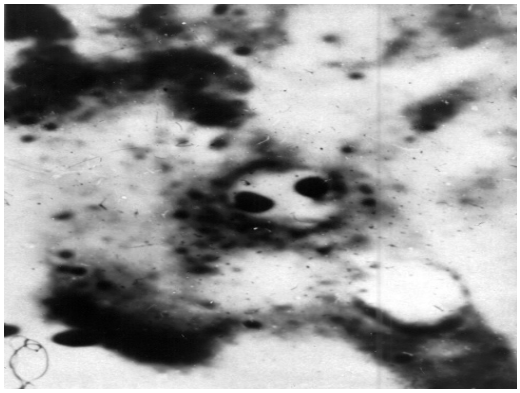

Photo 3. *Labeled gene pool of the autobacteria in the nuclear formations of the rat nephron epithelium on 38th day of the peroxide aggression of the renal parenchyma (Autoradiography x 1350). Own observations.*

Have the autobacteria actually accepted the terms of a new residence, which required them to possess the relevant morphofunctional or stem potentials? If this were true, then could these cells be reincarnated once again in an independent bacterium when they are removed from the host macroorganism? This is the entire genetic basis for this phenomenon. It will be sufficient to plant the organ-specific cells of the renal tissue in nutrient media and analyze the results.

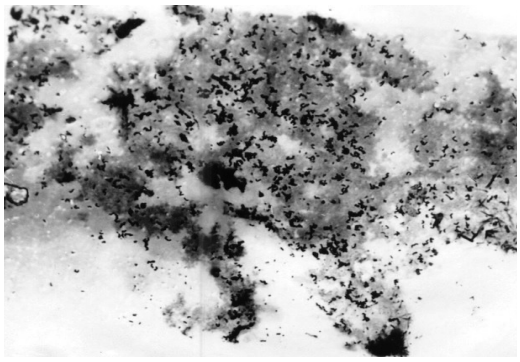

Photo 4. *The anaerobic microorganisms in the form of a spherical "cloud" surrounding the renal tissue on 7th day of incubation of the renal tissue cells in the universal medium. Hematoxylin-eosin. x 140. (Anaerobic monoculture). Own observations.*

In our modest clinical bacteriology laboratory, we observed the growth of the anaerobic microorganisms in the form of a spherical "cloud" surrounding the renal tissue on 7th day of incubation of the renal tissue cells in the universal medium at 37 degrees, under sterile anaerobic conditions. However, we could not identify the type of those particular bacteria (Photo 4).

Conclusion

Of course, the results obtained are easier to explain as being due to some dormant chronic anaerobic infection in the renal tissue; however, it could be a result of the stem potentials of the endogenous microflora. The question remains unanswered. Could it be true that all our observations were only artifacts? Could this have been an element of the phenomenon, which after 20 years was also observed successfully analyzed and described by our colleagues abroad?

Competing interests

The authors declare that they have no competing interests.

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