

# Optimizing the concentration of a cancer-treating drug (bleomycin) in patients undergoing electrochemotherapy

<b>Submission date</b> 17/10/2019	<b>Recruitment status</b> No longer recruiting	<input type="checkbox"/> Prospectively registered <input checked="" type="checkbox"/> Protocol
<b>Registration date</b> 21/10/2019	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan <input checked="" type="checkbox"/> Results
<b>Last Edited</b> 30/08/2022	<b>Condition category</b> Cancer	<input type="checkbox"/> Individual participant data

## Plain English summary of protocol

### Background and study aims

Bleomycin is a treatment for a number of types of cancer. Bleomycin is a type of antibiotic that is poisonous to cells. It binds to the cancer cells' DNA so that the cells can't divide or grow. Electrochemotherapy is a cancer treatment. The definition of therapeutic window of electrochemotherapy is based on the observed responses of the tumors that were treated at different time points after the drug injection. To refine the method, thorough knowledge is needed about the pharmacokinetics and pharmacodynamics of bleomycin, which would base on sensitive analytical method. This method was not available until recently. The aim of the study is therefore to determine pharmacokinetics and pharmacodynamics of bleomycin in patients treated with electrochemotherapy, for optimization of the treatment protocol

### Who can participate?

Patients aged over 18 eligible for electrochemotherapy of cutaneous tumors (basal cell carcinoma, squamous cell carcinoma, melanoma) and cutaneous metastases of melanoma and adenocarcinoma of the breast

### What does the study involve?

All participants have electrochemotherapy treatment. The procedure is standardized and is performed according to the published Standard Operating Procedure (SOP) for electrochemotherapy. The chemotherapy drug bleomycin is injected intravenously (through a needle in a vein) in dose of 15 000 IU/m<sup>2</sup>. After 8 minutes, electric pulses are delivered to the tumour in order to send the bleomycin into the cancer cells. Before the bleomycin application blood will be collected as well as 5, 10, 20 and 30 minutes after bleomycin injection, for bleomycin pharmacokinetics and pharmacodynamics analysis. Moreover collection of tumor tissue of the same patients at the time of application of electric pulses for determination of BLM concentration in treated tumors.

What are the possible benefits and risks of participating?

So far minimal or no side effects have been reported. Due to the pain caused by the electric pulses, local or general anaesthesia will be needed. There may be some reddening of the skin but no pain after the treatment is complete is expected.

Where is the study run from?

1. Institute of Oncology Ljubljana, Slovenia
2. Department of Otorhinolaryngology and Cervicofacial Surgery, University Medical Centre Ljubljana, Slovenia
3. Department of Dermatology and Allergology, University of Szeged, Hungary

When is the study starting and how long is it expected to run for?

August 2018 to June 2021

Who is funding the study?

Slovenian Research Agency, ARRS, Slovenia

Who is the main contact?

Prof. Gregor Sersa  
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## Contact information

### Type(s)

Scientific

### Contact name

Prof Gregor Sersa

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### Contact details

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## Additional identifiers

### Clinical Trials Information System (CTIS)

Nil known

### ClinicalTrials.gov (NCT)

Nil known

### Protocol serial number

Nil known

## Study information

### Scientific Title

Clinico-pharmacological approach to optimize the therapeutic bleomycin concentration in patients undergoing electrochemotherapy

### Acronym

ECT-BLM

### Study objectives

The aim of the study is to determine pharmacokinetics and pharmacodynamics of bleomycin in patients treated with electrochemotherapy, for optimization of the treatment protocol

### Ethics approval required

Old ethics approval format

### Ethics approval(s)

Approved 13/07/2017, Republic of Slovenia National Ethics Committee (Štefanova 5, 1000 Ljubljana, Slovenia; +386 01 478 69 13), ref: KME 39/06/17

### Study design

Multicentre interventional non-randomized study

### Primary study design

Interventional

### Study type(s)

Treatment

### Health condition(s) or problem(s) studied

Basal cell carcinoma, squamous cell carcinoma, melanoma or metastases of adenocarcinoma of the breast, treated with electrochemotherapy

### Interventions

All patients are treated with electrochemotherapy with bleomycin (BLM), according to European Standard Operating Procedures of Electrochemotherapy. Bleomycin will be injected intravenously in a dose of 15,000 IU/m<sup>2</sup> skin surface. The electric pulses will be delivered by electrodes to the tumors generated by electric pulse generator Cliniporator (IGEA, Carpi, Italy) 8-28 minutes after bleomycin injection. During the procedure tumor tissue and blood samples will be collected for the purpose of pharmacological analysis.

Data analysis for determination of:

- Pharmacokinetics of BLM in patients within different age groups.
- Correlation between the tumor response and BLM concentration in the tumors.
- Possible variability in drug concentration according to the tumor type.
- Impact of previous treatment(s) (radiotherapy, systemic therapies, surgery) on drug accumulation in the tumors.
- Optimization of the therapeutic window.

**Intervention Type**

Procedure/Surgery

**Primary outcome(s)**

Pharmacokinetics and pharmacodynamics of bleomycin assessed by:

1. Collection of patient's sera undergoing electrochemotherapy according to the SOP (5, 10, 20 and 30 min after ECT) and in compliance with the NICE recommendations for determination of in vivo BLM pharmacokinetics.
2. Collection of tumor tissue of the same patients at the time of application of electric pulses (8 min after intravenous 15 000 IU/m<sup>2</sup> BLM injection) for determination of BLM concentration in treated tumors.

**Key secondary outcome(s)**

n/a

**Completion date**

30/06/2021

**Eligibility****Key inclusion criteria**

1. Eligible for electrochemotherapy of cutaneous tumors (basal cell carcinoma, squamous cell carcinoma, melanoma) and cutaneous metastases of melanoma and adenocarcinoma of the breast
2. Age  $\geq$ 18 years
3. Agree to participate in this study and signed informed consent

**Participant type(s)**

Patient

**Healthy volunteers allowed**

No

**Age group**

Adult

**Lower age limit**

18 years

**Sex**

All

**Total final enrolment**

26

**Key exclusion criteria**

1. Do not comply with requirements for the blood collection, or samples were not collected according to the SOP for blood collection
2. Do not comply with the requirements for tumor biopsy, or samples were not collected according to the SOP for tissue sampling

**Date of first enrolment**

01/07/2018

**Date of final enrolment**

04/06/2021

## Locations

**Countries of recruitment**

Hungary

Slovenia

**Study participating centre**

Department of Otorhinolaryngology and Cervicofacial Surgery, University Medical Centre

**Ljubljana**

Zaloska 2

Ljubljana

Slovenia

1000

**Study participating centre**

**Institute of Oncology Ljubljana**

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**Study participating centre**

Department of Dermatology and Allergology, University of Szeged

Korányi fasor 6

Szeged

Hungary

6720

## Sponsor information

**Organisation**

Department of Otorhinolaryngology and Cervicofacial Surgery University Medical Centre

**ROR**

<https://ror.org/01nr6fy72>

## Funder(s)

### Funder type

Government

### Funder Name

Slovenian Research Agency, ARRS

## Results and Publications

### Individual participant data (IPD) sharing plan

The datasets generated during and/or analysed during the current study will be stored in a non-publicly available repository. International Network for Sharing Practices on Electrochemotherapy (INSPECT) group database;<http://www.insp-ect.org/default.aspx>

The database will be private, only available to Slovenian and Hungarian researchers designated for the study. Written informed consent will be signed. Patients will be anonymous, coded according to the standard InspECT coding system. Slovenian researchers together with Hungarian researchers will perform analysis of the results.

Other participants in InspECT group will not have access to the patients' files but will be informed about the progress in the study at regular yearly meetings

### IPD sharing plan summary

Stored in repository

### Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
<a href="#">Results article</a>		24/08/2021	26/08/2021	Yes	No
<a href="#">Protocol file</a>	version 3	21/10/2019	30/08/2022	No	No