ISRCTN17063005 https://doi.org/10.1186/ISRCTN17063005

The association between preterm birth, vaginal microbiome, immune defence and HPV among women with cervical precancer

Submission date
15/09/2015

Recruitment status
No longer recruiting

Registration date
22/03/2016

Overall study status
Completed

Last Edited
04/01/2023

Condition category
Infections and Infestations

[_] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[_] Record updated in last year

Plain English summary of protocol

Background and study aims
Human papilloma virus (HPV) are common viruses that affect the skin and moist membranes lining parts of the body, for example, the mouth, cervix and vagina. Most people will be infected with HPV at some point in their lives. It rarely causes any problems and goes away on its own. Some HPVs can cause changes to the cells of the cervix. These changed cells are then more likely to become cancerous. HPV infection is a necessary, but not sufficient cause for the development of cervical cancer and its precursors (that is, pre-cancerous changes).Our knowledge about human microbiome (the microorganisms – such as bacteria and viruses - on and in our body) has increased vastly after the development of novel sequencing methods and only recently HPV clearance rate (i.e how long it takes for the infection to go away) was shown to be dependent on vaginal microbiome type. Since development of cervical cancer requires HPV infection, studying the interplay between vaginal microbiome, mucosal immune system (the part of the immune system that protects mucous membranes) , HPV status (state of infection, if any), and the clinical presentation of the disease simultaneously is crucial for understanding why only a fraction of women infected with HPV develop cervical cancer. The aim of this study is to investigate whether the removal of abnormal (mucus secreting) cells during LEEP (loop electrosurgical excision procedure) treatment affects the immune defence system of the cervix, leading to an inbalance in the normal vaginal microbiome (dysbiosis) and possibly increasing the likelihood of inflammation and prolonged HPV infection.

Who can participate?
Women aged between 18-45, not pregnant and have been referred to colposcopy (a procedure to check for abnormal cells in a womans cervix or vagina) due to an abnormal Pap smear result.

What does the study involve?
Participants are placed into one of three groups. Those in group 1 are referred to colposcopy and LEEP treatment. Those in group 2 are referred to colposcopy, but do not have lesions (pre-cancerous changes) requiring LEEP treatment. Those in group 3 (the control group) have been recruited during routine Pap smear screening. Samples are taken from all participants before colposcopy and then six months later.

What are the possible benefits and risks of participating?
Not provided at time of registration

Where is the study run from?
Helsinki University Central Hospital (HUCH) Womens Hospital

When is the study starting and how long is it expected to run for?
September 2015 to December 2023

Who is funding the study?
Helsinki University Central Hospital

Who is the main contact?
Dr Pekka Nieminen

Contact information

Type(s)
Scientific

Contact name
Dr Pekka Nieminen

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Additional identifiers

Protocol serial number
N/A

Study information

Scientific Title
The association between preterm birth, vaginal microbiome, immune defence and HPV among women with cervical precancer: an observational single-center study

Acronym
MI-HPV

Study objectives
Our hypothesis is that the removal of mucus secreting cells in LEEP treatment compromises cervical immune defense and thus predisposes to ascending infection or inflammatory response against normal flora altering microbiota in the vagina and the microbiota might be dysbiotic in the first place to allow prolonged HPV-infection.

Ethics approval required
Old ethics approval format

Ethics approval(s)
University of Helsinki Institutional Review Board, 30/01/2014, ref: 21/13/03/2014

Study design
Observational single-center study

Primary study design
Observational

Study type(s)
Diagnostic

Health condition(s) or problem(s) studied
HPV infection

Interventions
We will recruit women referred to colposcopy due to an abnormal Pap smear result, age 18 to 45, who are not pregnant and have no previous cervical operation. There are then allocated to one of three groups.
1. Main study group: Women referred to colposcopy and LEEP treatment
2. Control group 1: Women referred to colposcopy, but do not have lesions requiring LEEP treatment.
3. Control group 2: Women recruited during routine Pap smear screening at HUSLab

Samples are taken before colposcopy and after six months follow-up, during the first control visit.

Intervention Type
Procedure/Surgery

Primary outcome(s)
1. Presence of immunomarkers, using multiplex ELISA
2. HPV-status, using PCR
3. Analysis of microbiota, by measuring hypervariable 16S

Results are compared between patients receiving treatment for HPV lesions with those that do not require treatment for lesions. Measurements are taken at baseline and 6 months later.

Key secondary outcome(s))
1. Presence of immunomarkers
2. HPV-status
3. Analysis of microbiota

Results are compared between patients with HPV at a colposcopy clinic to "healthy" controls undergoing Pap screening. Measurements are taken at baseline and 6 months later.

Completion date
31/12/2023

Eligibility

Key inclusion criteria
Healthy volunteers and colposcopy patients.

Participant type(s)
Mixed

Healthy volunteers allowed
No

Age group
Adult

Sex
Female

Key exclusion criteria
1. Pregnancy
2. Vaginal bleeding
3. Previous cervical surgery

Date of first enrolment
17/09/2015

Date of final enrolment
31/12/2019

Locations

Countries of recruitment
Finland

Study participating centre
Helsinki University Central Hospital (HUCH) Womens Hospital
Helsinki
Finland
00610

Sponsor information

Organisation
Helsinki University Central Hospital

ROR
https://ror.org/02e8hzf44

Funder(s)

Funder type
Not defined

Funder Name
Helsingin ja Uudenmaan Sairaanhoitopiiri

Alternative Name(s)
Helsinki University Central Hospital, HUS

Funding Body Type
Government organisation

Funding Body Subtype
Local government

Location
Finland

Funder Name
Helsingin Yliopisto

Alternative Name(s)
University of Helsinki, Helsingfors Universitet, Universitas Helsingiensis, HY, UH

Funding Body Type
Government organisation

Funding Body Subtype
Universities (academic only)

Location
Finland

Results and Publications

Individual participant data (IPD) sharing plan
Not provided at time of registration

IPD sharing plan summary

Not provided at time of registration

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes