

Workshop Report

EORS 2023 symposia - NetwOArk: Themes of COST action 21110 – Building a new European Society for Osteoarthritis Working Group 4, Grant period 1

EORS 2023, Alfandega do Porto, Porto, Portugal

Date: 29/9/2023

Introduction

This symposium was conducted to present the current activities of the NetwOArk COST action to attendees of the 31st Annual meeting of the European Orthopaedic Research Society (EORS) in Porto. The audience consisted of clinicians and researchers (academia and industry) who were introduced to the aims and objectives of the NetwOArk COST action and then three talks (each 20 minutes) were given by invited speakers of the action to elaborate on themes within the action. Specifically, patient engagement from a clinician's point of view for treating osteoarthritis (OA) (Working group 1), in vitro and ex vivo models for OA (Working group 2) and cellular and molecular endotypes of OA (Working group 3).

Objectives

Present: a) the current treatment algorithm for OA from a clinician's perspective as well as clinical outcome data from an orthobiologics study; b) how stratifying patients according to their cellular and molecular endotype can be used to identify and uncover novel drug therapies for OA; and c) the current in vitro/ex vivo models for testing drug or cellular therapies for OA without the requirement of animal models.

Activities of the workshop

The symposium consisted of an introductory presentation (5 minutes) and three presentations (15 minutes each) with a Q&A session (5 minutes) after each presentation.

Summary of proceedings

The symposium was opened by Prof. Denitsa Docheva (COST action member, Würzburg, Germany) and she introduced Prof. Sylvia Nürnberger (Vice chair of COST action, Vienna, Austria) who presented the opening talk about the aims and objectives of the NetwOArk COST action. Following this, Prof. Feza Korkusuz (OA COST member and Management Committee representative, Turkey) informed on how patients with OA are treated in clinical practice using a patient algorithm dependent upon OA severity. Additionally, he communicated on the outcome of a clinical study comparing patients treated with hyaluronic acid or platelet rich plasma (PRP). The second presentation was by Dr. Girish Pattappa (OA COST member and Management Committee representative, Regensburg, Germany) and it was focused on the current understanding of cellular and molecular endotypes for OA with an emphasis on the

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technologies (e.g. metabolomics, single cell RNAseq) used to discover novel biomarkers. The final presentation was given by Prof. Prof. Sylvia Nürnberger (Vice chair of COST action, Vienna, Austria) who provided an overview on the current in vitro models (e.g. osteochondral explant models) used for testing OA therapies (cellular or drugs) that have the potential to reduce the use of animal models in the future and meet the 3Rs (reduce, replace, refine) requirements.

Following each presentation, a question and answer session with the speakers allowed more in-depth discussions about the different talks.

Synopsis of the findings/conclusions



Figure 1. Highlights from the presentations at the EORS-NetwOArk symposia

The opening talk summarized the current OA therapies ranging from conservative, surgical and injectables (e.g. PRP, hyaluronic acid) interventions, educating the audience on the patients options. Results of a survey regarding how OA patients are treated today were also presented. Next, the current status of cellular and molecular endotypes for OA and how metabolomics and single cell RNAseq have been used for the identification of biomarkers were discussed. Last but not least, various in vitro and ex vivo models ranging from osteochondral explants to tribiological loading bioreactors were presented in concise manner. In sum, the symposium successfully disseminated information on the NetwOArk COST action as well as provided an excellent synopsis on OA clinical and basic research, whilst also pointed out areas for further research.

Recommendations

Symposium attendees found the workshop informative and provided very positive feedback for the aims of the NetwOArk COST action. The symposium was attended by 35 persons.

NetwOArk

The European Network on OsteoArthritis

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Acknowledgements

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Annex 1 Programme of the Workshop

The screenshot shows the EORS 2023 website interface. At the top, there is a navigation bar with links for 'Welcome to EORS 2023', 'Conference Program', 'ON & EORS Awards', 'Sponsorship & Exhibition', 'Contact Us', and 'Registration'. Below the navigation bar, the page title is 'Room Porto S26: NetwOARK'. The programme is listed as follows:

- 15:00 - 16:00: **Chairs**
Feza Korkusuz, Hacettepe University Medical Faculty
Denitsa Docheva, University Wuerzburg, Germany
- 20': **Patients Perspectives on Orthobiologics for Osteoarthritis**
Feza Korkusuz, Hacettepe University Medical Faculty
- 20': **Cellular and Molecular Endotypes for Osteoarthritis**
Girish Pattappa, University Medical Centre Regensburg
- 20': **Translational Models for OA: Speeding up from Bench to Bedside**
Sylvia Nürnberger, Medical University Vienna

A 'Back to Program' button is located at the bottom of the page.

Figure 2. Symposia on EORS 2023 website

S25: NetwOArk: Themes of COST action 21110 – Building a new European Society for Osteoarthritis

Chairs:

Feza Korkusuz, Hacettepe University Medical Faculty
Denitsa Docheva, Orthopaedic Hospital König-Ludwig-Haus, University of Würzburg

Osteoarthritis (OA) is one of the single most common causes of pain and physical disability in older adults with an estimated 10% to 15% of persons aged over 60 having some degree of OA, which is likely to increase due to increase in life expectancy throughout the world. Despite the growing OA epidemic and major socio-economic impact, there is a lack of disease-modifying therapies that can bring symptomatic relief and preserve joint function by preventing cartilage- and joint degeneration, thus delaying OA progression. Furthermore, research specifically aimed at OA management in Europe is scattered and not strategically coordinated. The main aim of EU COST action (netwOArk) is to set up the European Society for Osteoarthritis (ESOA) with an emphasis on holistic approach involving three major groups, 1) patients, 2) clinicians and 3) researchers from academia and industry. The COST actions area aims to increase understanding and develop scientific breakthroughs in primary prevention, diagnostics, treatment, interaction (comorbidities) and care management for the disease with a specific emphasis on patient-driven research. This symposia will introduce some of the topics within the COST action, explaining the importance of 1) the clinical basis and current diagnostics for OA, 2) stratifying patients based on a specific OA phenotypes and endotypes and 3) how translational models both ex vivo and animal models can be used to for development of novel treatments (cellular, biomaterials and pharmacological) for the disease.

Figure 3. Synopsis of EORS-NetwOArk symposia in the program book