

Mediocre accuracy in preoperative tissue biopsies diagnosing chronic periprosthetic joint infection: A cross-sectional study

Hannah Eriksson¹, Stergios Lazarinis¹

¹ Department of Orthopaedics, Uppsala University hospital

Introduction

The ability to distinguish between septic and aseptic failure of a joint prosthesis is crucial for treatment strategy optimisation. Preoperative tissue cultures are included in many diagnostic algorithms, but the degree of concordance with intraoperative cultures varies from 63-85%.

Aim

We evaluated the diagnostic performance of tissue biopsies as part of the preoperative diagnostic process and the concordance between microbiological findings in pre-and intraoperative biopsies.

Methods

44 patients who required revision surgery of total joint arthroplasty (hip/knee) because of non-functioning components with pain and loosening, were included. All patients underwent a diagnostic workup, including periprosthetic tissue biopsies before revision. The accuracy was calculated with the ICM criteria 2018 used as a reference and the concordance between pre-and intraoperative biopsies investigated. The ICM criteria were considered to be the best reference to evaluate the accuracy of the diagnostic biopsies, since they are used in clinical praxis to define PJI.

Results

The diagnostic accuracy of preoperative biopsies was 66 % with a sensitivity of 55 % and specificity of 100 %. Full concordance between tissue biopsies and intraoperative cultures was found in 30% of cases. In an additional 9 %, full concordance was shown but, an added pathogen was found intraoperatively. In 33 % of the cases the biopsies could not detect the pathogen found intraoperatively. In 12 % no pathogen was present in any biopsy but the patients fulfilled the ICM criteria.

Conclusion

The diagnostic value of preoperative tissue biopsies in diagnosing chronic PJI should be considered mediocre. The method shows high specificity and can be used to rule in and confirm a suspected PJI diagnosis.