Rapid processing of bone marrow biopsies (BMB's) with excellent morphology, immunohistochemistry and DNA quality

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Introduction: BMB is an essential part of the diagnosis in patients with haematological diseases. In line with other oncological fast diagnostic tracks we optimized the processing of BMB's to achieve reporting the following day.

Methods: 3-4 mm BMB's were routinely received in Burckhard's fixative. To speed up the decalcification time the BMB's were sliced lengthwise using a perspex mould (Fig. 1).

Fig .1

Fig. 2

Of 198 BMB's for validation of the new method one half was processed overnight with the Logos J (Milestone, Bergamo, Italy), a fully automated microwave-enhanced tissue-processor combining fixation, decalcification with an EDTA-based solution (USEDECALC, Medite, Orlando, USA), dehydration and paraffin impregnation in a closed system (Fig. 2). The other half was processed according to our routine protocol. The following day a panel of routine histochemical and immunohistochemical stains was performed. DNA quality was compared by extracting DNA from 50 µm slides using proteinase K treatment and ethanol precipitation. After purification of the DNA a size ladder primer PCR was performed and cDNA was run on an agarose gel.

Results: The processing time of the biopsies was reduced to 13 hours, allowing next-day diagnosis.
Routine histochemical and immunohistochemical stains showed comparable results for both methods (Fig. 3).
DNA degradation was less with the rapid processing, allowing detection of larger bands (Fig. 4).

Fig. 3

Routine protocol

A. HE 40x
B. Giemsa 40x
C. Leder 40x

Logos J

D. HE 40x
E. Giemsa 40x
F. Leder 40x

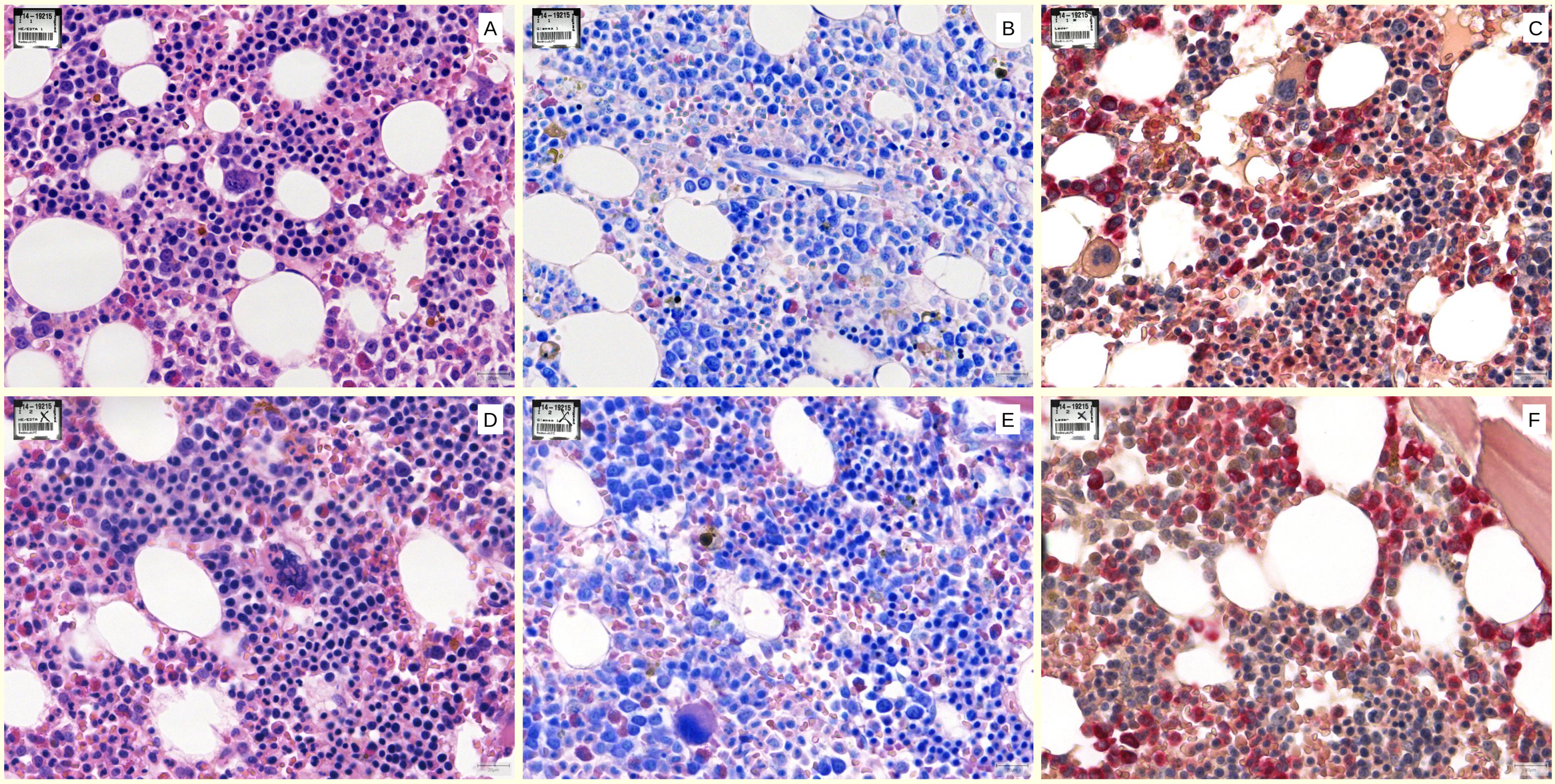
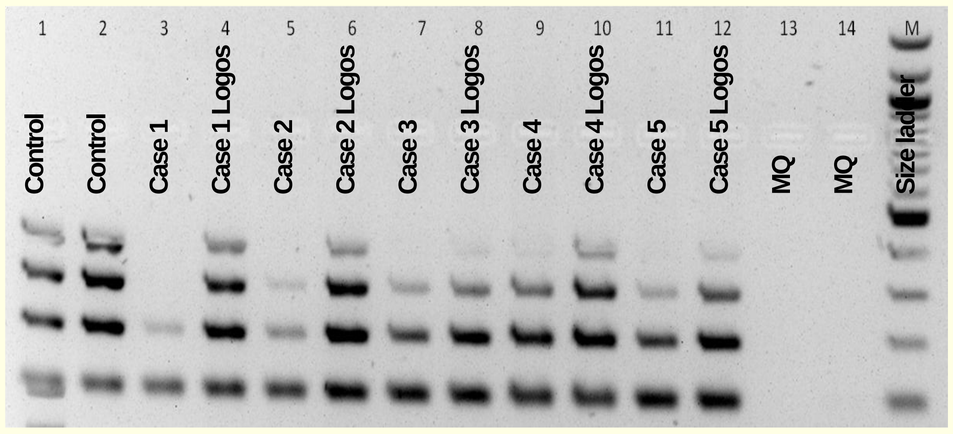


Fig. 4

Agarose gel



Conclusion: The introduction of Logos J technology for rapid BMB processing allowed reporting **the following day** without impairing morphology or immunohistochemistry, and improved DNA quality.
Currently more then 300 BMB have been processed with this optimized protocol for next-day diagnostics.

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