



Potential Applications of Liquid Biopsy in BCR-ABL1-Negative Myeloproliferative Neoplasms: A Systematic Review

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Background

In recent years, the use of liquid biopsy in solid and blood cancers has become an interesting option in the field of cancer diagnostics and cancer management. However, the potential applications of liquid biopsy have not been assessed in BCR-ABL1-negative myeloproliferative neoplasms (MPNs).

Objective

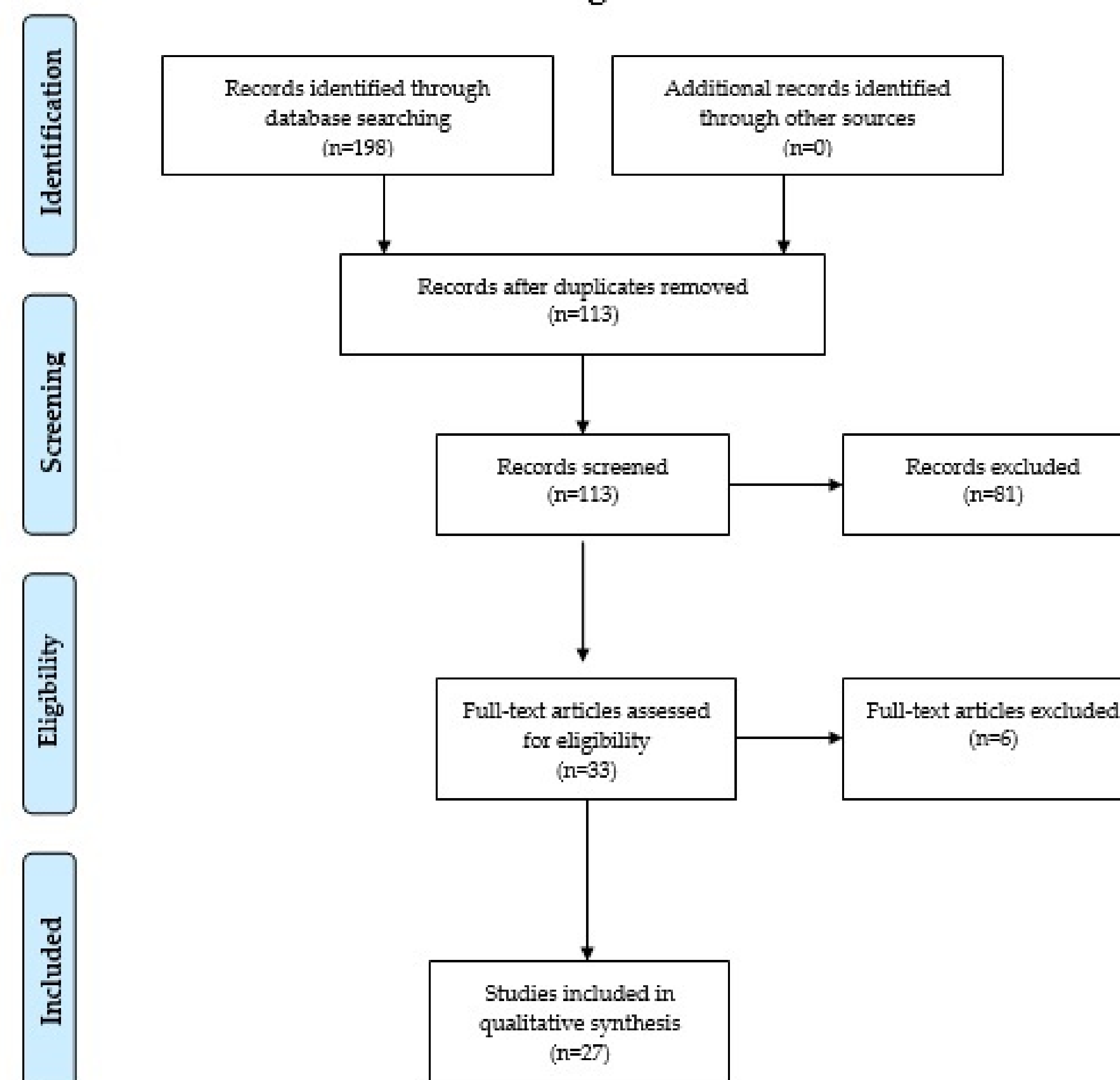
To investigate the potential applications of liquid biopsy in MPNs.

Methods

We performed a systematic search of Web of Science, PubMed/MEDLINE, and The Cochrane Library. Publications were retrieved from the inception of these databases until May 7, 2021. We only analyzed articles published in English, French, Italian, and Romanian. Only original articles or research letters exploring the potential applications of liquid biopsy in MPNs were included in the final analysis. Reviews, case reports, conference abstracts, and books were excluded.



PRISMA 2009 Flow Diagram



Găman MA, Cozma MA, Dobrică EC, Crețoiu SM, Găman AM, Diaconu CC. Liquid Biopsy and Potential Liquid Biopsy Based Biomarkers in Philadelphia-Negative Classical Myeloproliferative Neoplasms: A Systematic Review. Life (Basel). 2021;11(7):677. doi: 10.3390/life11070677. Impact Factor (2020): 3.817 - (Q2).

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Results

A systematic search was performed of Web of Science, PubMed/MEDLINE, and The Cochrane Library. In total, 198 potentially relevant papers were detected. Following the removal of duplicates (n=85), 113 records were screened. After the exclusion of irrelevant manuscripts, based on the screening of their titles and abstracts (n=81), we examined the full-texts of 33 manuscripts. Finally, after we applied the exclusion and inclusion criteria, 27 original articles were included in this review. The 27 studies assessed included 1,336 patients diagnosed with classical MPNs and were conducted predominantly in Europe (n=22; n=10 for Italy, n=4 for France), followed by Asia (n=4), and Australia (n=1). Most studies were observational (cross-sectional: n=25) in design and included all subtypes of classical MPNs (n=8), whereas others analyzed ET in particular (n=7), PV in particular (n=3), or PV+ET (n=3). The analyzed studies investigated the levels of cell-free DNA (n=1), extracellular vesicles (n=7), microparticles (n=14), or circulating endothelial cells (n=5) in MPNs. Flow-cytometry was by far the most commonly employed method of detection (n=23).

Conclusions

Based on the findings of this systematic review, we may hypothesize that in the near future, liquid biopsy might emerge as an important tool for the diagnosis and management of MPNs.