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Interval cancers in breast cancer screening: comparison of stage and biological characteristics with screen-detected cancers or incident cancers in the absence of screening

Francesca Caumo[1], Francesca Vecchiato[2], Marzia Strabbioli[1], Manuel Zorzi[3], Susanna Baracco[3], and Stefano Ciatto[1]

[1]Centro di Prevenzione Senologica (CPS), PO Marzana, ULSS 20, Verona; [2]Istituto di Radiologia, Università degli Studi di Verona, Policlinico GB Rossi, Verona; [3]Registro Tumori, Istituto Oncologico Veneto/IOV IRCCS), Padua, Italy

ABSTRACT

Aims and background. To analyze stage distribution and biological features of interval cancers observed in Verona mammography screening compared to screen-detected cancers and "clinical" cancers occurring in the absence of screening, as provided by the Veneto Cancer Registry.

Methods and study design. Screen-detected cancers were identified in the screening archives. Interval cancers and clinical cancers (occurring in women never screened or not yet invited) were identified through the local cancer registry. Studied variables were age, stage, pathological pT and pN category, histological grading, estrogen and progesterone receptor status, and proliferation index (Ki67).

Results. We compared 95 interval cancers, 761 screen-detected cancers, and 1873 clinical cancer cases. Interval cancers had more aggressive features than screen-detected cancers, the difference being statistically significant for pT ($P = 10^{-6}$), pN ($P = 0.0003$), grading ($P = 0.007$), estrogen receptors ($P = 0.0006$), and progesterone receptors ($P = 0.00005$), but not for Ki67 ($P = 0.18$). The features of interval cancers were not more aggressive than those of clinical cancers for pT ($P = 0.84$), pN ($P = 0.33$), grading ($P = 0.61$), estrogen receptors ($P = 0.48$), and progesterone receptors ($P = 0.69$), and were better for Ki67 ($P = 0.02$). In contrast, screen-detected cancers showed significantly better features than clinical cancers, for all studied variables: pT ($P = 10^{-6}$), pN ($P = 10^{-6}$), grading ($P = 10^{-6}$), estrogen receptors ($P = 10^{-5}$), progesterone receptors ($P = 10^{-6}$), and Ki67 ($P = 10^{-6}$).

Conclusions. Our findings are consistent with the length biased sampling hypothesis of interval cancers having a faster growth rate and a less favorable presentation than screen-detected cancers. Compared to clinical cancers, interval cancers had similar features, whereas screen-detected cancers had definitely more favorable features. This finding suggests, rather than a faster growth rate for interval cancers, a slower growth rate for screen-detected cancers, which, together with diagnostic anticipation, may explain a certain degree of overdiagnosis. **Free full text available at www.tumorionline.it**

Key words: breast cancer, diagnosis, interval cancers, mammography, screening.

Correspondence to: Stefano Ciatto, Corte Cà Brusà 1G, 37067 Valeggio sul Mincio (VR), Italy.
Tel +39-348-6540748;
fax +39-045-8075293;
e-mail stefano.ciatto@gmail.com

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