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JOURNAL OF SURGERYjournal homepage: www.int-journal-surgery.com

LETTER TO THE EDITOR

Increased tissue stiffness during mammography may contribute to carcinogenesis

Dear Sir,

Women undergoing mammography have 12 times the diagnosis of ductal carcinoma in situ. Diagnosis at this "earlier" stage is expected to improve treatment outcome and reduce incidence of larger invasive cancers. However, paradoxically the diagnosis of invasive cancer in women undergoing biennial mammographic screening appears to double during the 40 years (40–79 years) compared to those not being screened.¹ This could be either explained by one of the two possibilities: (a) the process of mammography actually induces cancers or (b) about half of invasive cancers that mammography discovers in asymptomatic women do not normally progress to symptomatic cancers. Our prejudice has always favoured the latter. However, we note with interest that stiffness of tissues could promote cancer cell growth and alteration of matrix mechanics can activate integrins which can promote mitogenic signalling through Erk as well as cell contractility through Rho.² When women undergo mammography the pressure within the breast

tissues can be as high as 115 Newtons (11.7 kg).³ This compression of tissue could lead to momentary stiffness that occurs concurrently with potentially carcinogenic effects of low dose ionising radiation. A synergy between these two insults may well push a cell into malignant transformation.

References

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