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Incidence of tamoxifen-related fatty liver disease: a systematic review and meta-analysis

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Background/Aims: It is well known that tamoxifen treatment is associated with an increased risk of developing nonalcoholic fatty liver disease (NAFLD). We conducted a systematic review and meta-analysis to evaluate the incidence of NAFLD using tamoxifen in breast cancer patients. **Methods:** We searched PubMed, EMBASE, and the Cochrane Library from database inception to December, 2018, for studies reporting incidence of NAFLD using tamoxifen. Cross-sectional, cohort and randomized controlled trials with >25 participants were included. The lists of authors and abstracts from the search were reviewed by two investigators to determine the manuscripts for full text review. Event rates were calculated using a random-effects model. **Results:** Twenty studies including 9796 patients met our inclusion criteria. The overall prevalence of obesity of tamoxifen induced NAFLD was 40.9% from 11 cross-sectional studies. The overall incidence of NAFLD was 71.0/1000 patient per years in tamoxifen group and 23.7/1000 patient per years in non-tamoxifen group from 1 randomized control trial and 8 cohort studies. The risk of NAFLD was much higher in tamoxifen group (incidence rate ratio 2.77, 95% CI 1.87-4.08, I²=69%). **Conclusions:** Use of tamoxifen is associated with increased risk of incidence and prevalence of NAFLD. Therefore, long-term use of tamoxifen requires clinical attention and regular liver imaging follow-up is required. Key words : tamoxifen; nonalcoholic fatty liver disease; incidence; prevalence

Study	Experimental Events	Experimental Time	Control Events	Control Time	Incidence Rate Ratio	IRR	95%-CI	Weight (fixed)	Weight (random)
Hong, 2017	128.7	1000.00	81.1	1000.00		1.59	[1.20; 2.10]	46.8%	17.6%
Yang, 2016	47.0	433.04	19.0	625.42		3.57	[2.10; 6.09]	9.0%	14.2%
Pan, 2016	123.0	614.02	15.0	311.50		4.16	[2.43; 7.11]	11.5%	14.2%
Lin, 2014	60.0	525.00	17.0	534.00		3.59	[2.10; 6.15]	9.7%	14.2%
Saphner, 2009	16.0	1477.67	1.0	535.33		5.80	[0.77; 43.71]	0.8%	3.1%
Bitici, 2007	12.0	24.51	8.0	18.74		1.15	[0.47; 2.81]	5.2%	9.6%
Liu, 2006	82.0	858.00	8.0	320.33		3.83	[1.85; 7.91]	6.7%	11.6%
Bruno, 2005	34.0	9189.19	18.0	9473.68		1.95	[1.10; 3.45]	10.2%	13.7%
Murata, 2000	40.0	525.00	0.0	155.00		23.91	[1.47; 388.91]	0.0%	1.8%
Fixed effect model						2.56	[2.14; 3.07]	100.0%	--
Random effects model						2.77	[1.87; 4.08]	--	100.0%
Heterogeneity: I ² = 69%, τ^2 = 0.2042, p < 0.01									

