

**Table 1** Frequency distribution of human papillomavirus (HPV) DNA signal scoring from samples of malignant breast cancer, benign breast tumour and normal healthy breast tissues

HPV signal scoring	Malignant breast tumour group		Benign breast tumour group		Healthy breast group	
	No.	%	No.	%	No.	%
<b>Signal</b>						
Negative	69	53.5	21	87.5	20	100.0
Positive <sup>a</sup>	60	46.5	3	12.5	0	0.0
Total	129	100.0	24	100.0	20	100.0
<b>Scores<sup>b</sup></b>						
1	9/60	15.0	0/3	0.0	0/0	0.0
2	20/60	33.3	1/3	33.3	0/0	0.0
3	31/60	51.7	2/3	66.7	0/0	0.0
<b>Mean rank<sup>c</sup></b>		95.6		67.1		55.5

<sup>a</sup>Mann-Whitney test for difference in mean rank comparing: all 3 study groups ( $P < 0.001$ ); benign tumour versus healthy groups ( $P = 0.11$ ); malignant tumour versus healthy groups ( $P < 0.001$ ); malignant versus benign tumour groups ( $P = 0.004$ ). Kruskal-Wallis test for difference in signal scoring comparing: malignant versus benign tumour groups for HPV-positive cases ( $P = 0.52$ ). Healthy controls were not compared because all were HPV negative.

<sup>b</sup>Score 1: 1%–25%; score 2: 26%–50%; score 3: > 50%.

<sup>c</sup>Indicates significant differences in rates of positivity of HPV detection compared with ranks of HPV detection rates in the groups showing benign tumours and healthy breast tissues.