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Trends in surgery of squamous cell vulvar cancer patients over a 16-year period (1998-2013): a population-based analysis

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Introduction

The objective was to identify trends in treatment and outcome of invasive squamous vulvar cancer in a population-based setting.

Methods

The Munich Cancer Registry (MCR) is the population based clinical cancer registry of Upper Bavaria and a part of Lower Bavaria (Southern Germany). Its catchment area has increased from 2.3 million inhabitants to 3.8 million in 2002 and to 4.6 million in 2007 (meanwhile 4.7 million).

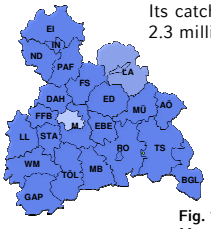

Fig. 1: Catchment area of the Munich Cancer Registry (MCR)

1,113 patients with an invasive squamous cell vulvar cancer diagnosed between 1998 and 2013 in the catchment area of the Munich Cancer Registry (MCR) were analysed. Trends in prognostic factors and treatment were analysed by comparing patients diagnosed 1998-2008 (n=629) with patients diagnosed 2009-2013 (n=484).

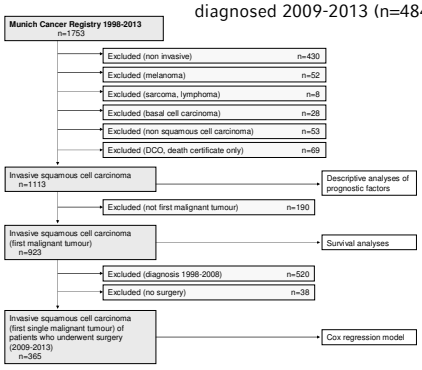

Fig. 2: Flow chart of vulvar cancer patients

Results

Prognostic factors

The high median age at diagnosis (75.0 years) did not change significantly between patients diagnosed 1998-2008 compared to patients diagnosed 2009-2013. There are no significant changes in subsite of tumour and grading.

Table 1: Patients' and tumour characteristics

	1998-2008 n=629		2009-2013 n=484		Total n=1113		p
Age							
Mean / Median	72.3 / 75.4		71.5 / 74.1		72.0 / 75.0		0.306
	n	%	n	%	n	%	
<50	59	9.4	54	11.2	113	10.2	0.804
50-59	63	10.0	47	9.7	110	9.9	
60-69	111	17.7	80	16.5	191	17.2	
70-79	181	28.8	147	30.4	328	29.5	
>=80	215	34.2	156	32.2	371	33.3	
Subsite	n	%	n	%	n	%	0.510
Labia	126	69.6	204	69.9	330	69.8	
Clitoris	36	19.9	49	16.8	85	18.0	
Overlapping lesion	19	10.5	39	13.4	58	12.3	
Missing	*448*	*71.2*	*192*	*39.7*	*640*	*57.5*	
Grading	n	%	n	%	n	%	0.243
G1	107	18.6	78	16.4	185	17.6	
G2	316	55.1	286	60.2	602	57.4	
G3/4	151	26.3	111	23.4	262	25.0	
Missing / GX	55	*8.7*	9	*1.9*	*64*	*5.8*	
FIGO	n	%	n	%	n	%	< 0.001
IA	65	11.6	62	13.7	127	12.5	
IB	132	23.5	227	50.0	359	35.3	
II	195	34.6	37	8.2	232	22.8	
III	115	20.4			202	19.9	
IIIA	0		47	10.4			
IIIB	0		20	4.4			
IIIC	0		20	4.4			
IVA	33	5.9	28	6.2	61	6.0	
IVB	23	4.1	13	2.9	36	3.5	
Missing	*66*	*10.5*	*30*	*6.2*	*96*	*8.6*	

Treatment

94.8% of the patients underwent surgery. The percentage of patients with adjuvant radio(chemo)therapy or primary radio(chemo)therapy did not change significantly over time (p=0.164).

Table 2: Treatment options based on time of diagnosis

	1998-2008 n=629		2009-2013 n=484		Total n=1113		p-value
Therapy	n	%	n	%	n	%	
Surgery	464	78.1	365	78.5	829	78.3	0.164
Surgery + radiotherapy	105	17.7	70	15.1	175	16.5	
Radiotherapy	25	4.2	30	6.5	55	5.2	
Missing	*35*	*5.6*	*19*	*3.9*	*54*	*4.9*	
Surgery	n=569		n=435		n=1004		
Surgical procedure	n	%	n	%	n	%	
Wide excision	160	30.6	168	42.2	328	35.6	<0.001
Partial vulvectomy	208	39.8	154	38.7	362	39.3	
Complete vulvectomy	145	27.7	71	17.8	216	23.5	
Other	10	1.9	5	1.3	15	1.6	
Missing	*46*	*8.1*	*37*	*8.5*	*83*	*8.3*	
Residual tumour	n	%	n	%	n	%	
R0	390	83.2	349	88.8	739	85.7	0.018
R1	79	16.8	44	11.2	123	14.3	
Missing	*100*	*17.6*	*42*	*9.7*	*142*	*14.1*	
Sentinel surgery (SLNB)	n	%	n	%	n	%	
Yes	65	11.4	170	39.1	235	23.4	<0.001
Thereof positive	7	10.8	24	14.12	31	13.2	0.497
LN surgery (incl. SLNB)	n	%	n	%	n	%	
Yes	329	57.8	283	65.1	612	61.0	0.020
No	240	42.2	152	34.9	392	39.0	
Type of LN surgery (incl. SLNB)	n	%	n	%	n	%	
Sentinel alone	33	5.8	109	25.1	142	14.1	<0.001
Unilateral inguinal	78	13.7	43	9.9	121	12.1	
Bilateral inguinal	177	31.1	93	21.4	270	26.9	
Inguinal NOS	12	2.1	16	3.7	28	2.8	
Pelvic	13	2.3	14	3.2	27	2.7	
LND NOS	16	2.8	8	1.8	24	2.4	
No LN surgery	240	42.2	152	34.9	392	39.0	
LND (without SLNB)	n=296		n=174		n=470		
Dissected LNs							
Mean/median	15.1 / 14.5		14.6 / 13.0		15.1 / 14.0		0.295
	n	%	n	%	n	%	
1 – 5	29	11.4	22	12.9	51	12.0	0.480
6 – 11	58	22.8	46	27.1	104	24.5	
> 11	167	65.8	102	60.0	269	63.4	
Missing	*42*	*14.2*	*4*	*2.3*	*46*	*9.8*	

LN: Lymph node LND: Lymph node dissection SLNB: Sentinel lymph node biopsy
NOS: not otherwise specified

In surgery, a trend towards less radical locoregional procedures was noted. The use of local wide excision increased significantly while the percentage of patients who underwent complete vulvectomy decreased (p=0.001). Despite less radical surgery, the proportion of patients with complete removal of the tumour (R0) increased from 83.2 to 88.8% (p=0.018). In patients who underwent surgery, a significant increase in the use of sentinel lymph node (p<0.001) could be observed.

Table 3: Therapy, type of surgery, and lymph node dissection based on FIGO stage (2009-2013)

	FIGO IA		FIGO IB		FIGO II		FIGO III		FIGO IV		Missing	Total	
Therapy	n	%	n	%	n	%	n	%	n	%	n	n	%
Surgery	61	98.4	211	93.4	29	78.4	39	46.4	9	24.3	16	365	78.5
Surgery + radiotherapy	1	1.6	14	6.2	7	18.9	41	48.8	6	16.2	1	70	15.1
Radiotherapy	0	0.0	1	0.4	1	2.7	4	4.8	22	59.5	2	30	6.5
Missing	*0*	*0.0*	*1*	*0.4*	*0*	*0.0*	*3*	*3.5*	*4*	*9.8*	*11*	*19*	*3.9*
Total	62	100	227	100	37	100	87	100	41	100	30	484	100
Surgical procedure *	n	%	n	%	n	%	n	%	n	%	n	n	%
Wide excision	31	64.6	92	43.6	12	37.5	20	25.6	3	20	10	168	42.2
Partial vulvectomy	15	31.3	87	41.2	13	40.6	29	37.2	8	53.3	2	154	38.7
Complete vulvectomy	2	4.2	29	13.7	7	21.9	29	37.2	3	20.0	1	71	17.8
Others	0	0.0	3	1.4	0	0.0	0	0.0	1	6.7	1	5	1.3
Missing	*14*	*22.6*	*14*	*6.2*	*4*	*11.1*	*2*	*2.5*	*0*	*0.0*	*3*	*37*	*8.5*
Total	62	100	225	100	36	100	80	100	15	100	17	435	100
LND / SLNB *	n	%	n	%	n	%	n	%	n	%	n	n	%
SLNB alone	9	15.5	90	40.0	2	5.6	5	6.3	0	0.0	3	109	25.1
Inguinal	3	4.8	64	28.4	19	52.8	65	81.3	8	53.3	1	160	36.8
Pelvic	0	0.0	0	0.0	1	2.8	8	10.0	5	33.3	0	14	3.2
No SLNB/LND	50	80.7	71	31.6	14	38.9	2	2.5	2	13.3	13	152	34.9
Total	62	100	225	100	36	100	80	100	15	100	17	435	100

* Patients who underwent surgery
LND: Lymph node dissection SLNB: Sentinel lymph node biopsy

Survival analysis

No differences in overall and relative survival were noted between patients diagnosed 1998-2008 and patients diagnosed 2009-2013.

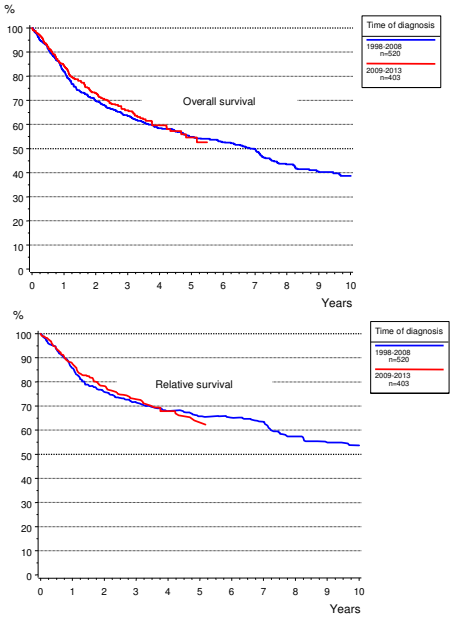

Fig. 3: Overall and relative survival based on the time of diagnosis

After adjustment for the prognostic factors age, subsite, FIGO and grading, less radical locoregional surgery had no influence on survival.

Table 4: Cox regression model (overall survival) for patients that underwent surgery (2009-2013)

	Overall survival		
n=365	HR	(95% CI)	p-value
Age			
50-69	1.000		<0.001
70-79	3.328	(1.778-6.227)	
80 and older	6.518	(3.604-11.788)	
Subsite			
Labia	1.000		0.663
Clitoris	1.365	(0.726-2.566)	
Overlapping lesion	1.092	(0.508-2.346)	
Missing	*1.263*	*(0.817-1.952)*	
FIGO			
IA	1.000		<0.001
IB	1.898	(0.655-5.502)	
II	2.397	(0.716-8.027)	
III	6.672	(2.118-21.017)	
IV	5.839	(1.640-20.786)	
Missing	*2.359*	*(0.505-11.027)*	
Grading			
G1	1.000		0.588
G2	0.819	(0.443-1.513)	
G3/4	1.134	(0.578-2.225)	
Surgical procedure			
Wide excision	1.000		0.391
Partial vulvectomy	1.471	(0.898-2.409)	
Complete vulvectomy	1.461	(0.821-2.600)	
Missing	*0.866*	*(0.289-2.596)*	
Lymph node surgery			
Lymph node dissection	1.000		0.540
Sentinel only/no lymph node dissection	1.182	(0.692-2.018)	

Conclusions

Less radical locoregional surgery in squamous cell vulvar cancer seems to have increasingly been implemented in the area of the Munich Cancer Registry. Survival outcome measurements were not affected by these changes.

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Deutscher Krebskongress Februar 2016