cancers

Supplementary Material: Tumour Evolution and Seed and Soil Mechanism in Pancreatic Metastases of Renal Cell Carcinoma

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Table S1. Interval between RCC surgery and occurrence of pancreatic metastases (metachronous cases).

Author	Year	Interval (y)
Milanetto [57]	2020	7
Fahlbusch [27]	2020	14
Chikhladze [28]	2020	10
Di Franco [56]	2020	6.9
Anderson [47]	2020	8
Ma [63]	2019	11
Chatzizacharias [64]	2017	6.7
Dong [65]	2016	6,9
Fikatas [66]	2016	10.2
Yuasa [67]	2015	7.8
Benhaim [30]	2015	10.8
Kimura [32]	2014	8.4
Moletta [33]	2014	8.2
Schwarz [68]	2014	9,8
Tosoian [69]	2014	11.2
Niess [70]	2013	8.2
Alzahrani [44]	2012	7.8
Yazbek [71]	2012	11.4
You [34]	2011	5.3
Konstantinidis [35]	2010	8.7
Volk [83]	2009	7.8
Tanis [72]	2009	9.8
Schauer [39]	2008	9.2
Akatsu [40]	2007	7.0
Eidt [73]	2007	13
Crippa [74]	2006	5.5
Wente [41]	2005	7.2
Bassi [75]	2003	10.5
Law [76]	2003	6.9
Peschaud [77]	2002	8.7
Thompson [78]	2000	8.4
Ghavamian [79]	2000	9.7
Kassabian [80]	2000	12

Table S2. Frequency of multiple isPMRCC (*N* = number of reported isPMRCC cases; % = frequency of multiple PM).

Author	Year	N	%
Bauschke [62]	2021	16	19
Milanetto [57]	2020	39	54
Anderson [47]	2020	29	48
Di Franco [56]	2020	21	62
Chikhladze [28]	2020	20	40
Ma [63]	2019	13	31
Benhaim [30]	2015	20	35
Moletta [33]	2014	8	50
Schwarz [68]	2014	62	37
Yazbek [71]	2012	11	9
You [34]	2011	7	28
Konstandinidis [35]	2010	20	25
Tanis [72]	2009	10	30
Volk [83]	2009	14	28
Schauer [39]	2008	10	70
Zerbi [84]	2008	23	28
Wente [41]	2005	15	33
Bassi [75]	2003	17	47
Law [76]	2003	14	36
Peschaud [77]	2002	7	29
Ghavamian [79]	2000	23	48
Kassabian [80]	2000	5	60
Thompson [78]	2000	21	43

Table S3. 5-year survival rates (5y SVR) and median survival times (ST) following surgical treatment of isPMRCC.

Author, Year	N	Follow up Time (months)	5y SVR (%)	ST (years)
Bauschke [62], 2021	16		68	5.4
Milanetto [57], 2020	39	68	79**	
Fahlbusch [27], 2020	12		84*	
Di Franco [56], 2020	21	77	72	6.3
Chikhladze [28], 2020	20	76	89	
Anderson [47], 2020	29	64	80*	
Ito [46], 2018	58		70**	
Madkhali [43], 2018	17		50	
Chatzizacharias [64], 2017	7	33	71	7.8
Fikatas [66], 2016	19	49	71	
Yuasa [67], 2015	20	42	79	
Benhaim [30], 2015	20	69	72*	
Wiltberger [31], 2015	10	76	60	
Untch [24], 2014	27	30		8.0
Tosoian [69], 2014	42	84	52	5.5
Schwarz [68], 2014	62	91	63**	4.4
Kimura [32], 2014	13	67	77	
Yazbek [71], 2012	11			6.5
Konstandinidis [35], 2010	20	38	61	8.7
You [34], 2010	7		66	8.75
Volk [83], 2009	14			6.2
Zerbi [84], 2008	23	31	88	3.7
Schauer [39], 2008	10	56		6.2
Bahra [85], 2008	9		100	
Eidt [73], 2007	7			4.3
Crippa [74], 2006	5		80	3.4
Wente [41], 2005	12		53	
Law [76], 2003	14	32	75**	
Bassi [75], 2003	22	33	53	
Sohn [101], 2001	10		75	
Faure [42], 2001				4.0
Ghavamian [79], 2000	11			4.6
Thompson [78], 2000	21		43	6.2

* 4-year survival rate; ** multicentre report.

Table S4. Distant organ metastases occurring after isPMRCC surgery (*N* = number of observations);

Author	Year	*N*	Site
Chikhladze [28]	2020	7	Contralat. kidney [1]; muscle; bone/adrenal/lung; lung/bone; liver/lung; spinal cord/kidney [1]; LN [1]
Schammel [55]	2020	1	Pancreatic remnant [1]
Glinka [53]	2019	4	Lung; bone; brain/bone; bone
Yagi [23]	2017	2	Lung; lung
Shatveryan [116]	2017	1	Lung
Nihei [115]	2016	1	Pancreas caput [1]
Chang [114]	2015	1	Pancreatic remnant [1]
Takeshi [113]	2014	1	Cauda panc. [1]
Moletta [33]	2014	5	Liver, liver, thyroid, lung, pancreas [1]
Macri [52]	2014	1	Pancreas corpus, [1]
Lauro [112]	2014	1	Lung
Espinoza [100]	2014	2	Lung, lung
Yoshikawa [98]	2013	1	Pancreatic remnant [1]
Niess [70]	2013	10	Lung/bone/liver; brain/lung; lung/parotid; lung/liver; thyroid/cerebellum; mediastinum/heart/brain; liver; lung/brain; liver/bone; lung
Hata [97]	2013	1	Duodenum
Yazbek [71]	2012	5	Local [1]; pancreas [1]; distant pancreas [1]; distant pancreas [1]; diffuse; distant pancreas [1]
You [34]	2011	5	Brain; lung; liver/lung; adrenal[1]/lung; lung
Watanabe [94]	2011	2	Liver; liver/lung
Masetti [111]	2010	1	Lung
Machado [110]	2009	1	Bone
Deguchi [93]	2009	7	Thyroid; lung/LN [1]; lung/bone/liver; lung; contralat. kidney [1]/lung; liver/GI tract; pituitary/bone
Zerbi [84]	2008	11	Lung; lung; lung; lung; liver; liver; retroperit. LN [1]; brain; lung/brain; psoas; pancreas [1]
Schauer [39]	2008	3	Diffuse
Karimi [109]	2007	2	Diffuse
Eidt [73]	2007	1	Diffuse
Köhler [92]	2006	1	Liver
Sellner [21]	2006	5	Pancreas[1]; pancreas[1]; skin; thyroid; liver/adrenal
Ninan [108]	2005	1	Thyroid
Minni [88]	2004	1	Adrenal [1]
Zacharoulis [107]	2003	2	Bone; lung
Law [76]	2003	8	Pancreas [1]; lung; retroperit.LN[1]; pancreas [1]; distant pancreas [1]; pancreas [1]; lung; pancreas [1]
Bechade [99]	2002	2	Thyroid, lung
Sohn [101]	2001	1	Soft tissue
Faure [42]	2001	3	Liver/lung/brain; liver/lung/brain; bone
Le Borgne [91]	2000	1	Liver
Kassabian [80]	2000	2	Lung; pancreas/liver;
Ghavamian [79]	2000	6	Mesentery [1]; lung; chest wall; lung; adrenal [1]; omentum [1]
Yavaşçaoğlu [106]	1999	1	Periprostatic
Merkle [90]	1998	1	Liver
Hashimoto [86]	1998	3	Multiple; skin; mediast. LN[1]/lung
Butturini [89]	1998	1	Liver
Altschuler [96]	1998	1	Lung
Onishi [105]	1995	1	Multiple
Fabre [104]	1995	1	Brain

Marcote [103]	1993	1	Bone
Oka [102]	1991	1	Pituiary
Simpson [95]	1989	1	Thyroid
Py [87]	1984	2	Bone/liver; thyroid/liver/pancreas
Total		124	haematogenous metastases 93 75% pancreatic metastases 19 15.3%

[1] Metastases that are not unequivocally attributable to a systemic haematogenous spread.

Table S5. Frequency (%) of regional LN metastases; *n* = cases with LN, *N* = operated isPMRCC;

Year	Author	*n*	N	%
Institution reports				
2020	Milanetto [57]	5	39	12.8
2020	Di Franco [56]	5	21	23.8
2020	Chikhladze [28]	0	11	0
2018	Madkhali [43]	0	17	0
2015	Benhaim [30]	0	20	0
2014	Kimura [32]	0	13	0
2014	Tosoian [69]	2	39	5.1
2014	Schwarz [68]	9	33	27.3
2010	Konstantinidis [35]	3	12	25
2008	Zerbi [84]	0	23	0
2007	Eidt [73]	0	7	0
2005	Wente [41]	0	15	0
2004	Moussa [122]	0	22	0
2003	Bassi [75]	0	22	0
Casuistic reports			187	
2015	Gajendra [123]	1		
2012	Yazbek [71]	3		
2004	Minni [88]	1		
2003	Law [76]	1		
		30	481	6.2

Table S6. Liver metastases occurring after isPMRCC surgery;

Author	Year	*N*
Chikhladze [28]	2020	1
Brozetti [124]	2019	1
Moletta [33]	2014	2
Niess [70]	2013	4
You [34]	2011	1
Watanabe [94]	2011	2
Deguchi [93]	2009	2
Zerbi [84]	2008	2
Köhler [92]	2006	1
Sellner [21]	2006	1
Faure [42]	2001	2
Le Borgne [91]	2000	1
Kassabian [80]	2000	1
Merkle [90]	1998	1
Butturini [89]	1998	1
Py [87]	1984	2
Total		25

Table S7. Distant organ metastases occurring before isPMRCC surgery.

Author	Year	*N*	Localisation
Chikhladze [28]	2020	4	Contralat. kidney[1], thyroid, lung, paratid
Wakabayashi [133]	2019	1	Lung
Yamashita [132]	2018	1	Adrenal[1]/thyroid
Yagi [23]	2017	1	Lung
Boussios [131]	2016	1	Hepar
Kitade [130]	2015	1	Chest wall/thyroid
Yoshikawa [98]	2013	1	Contralat. kidney[1]
Niess [70]	2013	4	Lung/peritoneum, lung/thyroid, cerebellum; lung
Hata [97]	2013	1	Thoracic vertebrae
Zygulska [129]	2012	1	Gallbladder
Yazbek [71]	2012	2	Lung, adrenal[1]
You [34]	2011	1	Thyroid
Mourra [36]	2010	2	brain; lung
Deguchi [93]	2009	4	Lung/LN[1]; lung; lung; lung/pituitary,
Zerbi [84]	2008	4	Lung; brain; thyroid; muscle
Schauer [39]	2008	4	Adrenal/local[1]; thyroid/breast; local[1]; thyroid
Maeda [128]	2007	1	Lung
Bassi [75]	2003	4	Thyroid; thyroid; adrenal[1]; contralat. kidney[1]
Mehta [125]	2000	1	Lung
Hashimoto [86]	1998	1	Bowel
Altschuler [96]	1998	1	Lung
Adem [127]	1998	1	Hepar/cerebellum
Barras [126]	1996	1	Lung
Simpson [95]	1989	1	Contralat. kidney[1]
Strijk [118]	1989	1	Skin
Total		45	Hematogenous metastases 35 (78%]

[1] Metastases that can be attributed to a local metastatic pathway.