

Ductal Adenocarcinoma of the Prostate (DAC): a comprehensive systematic review and meta-analysis of incidence, presentation and management.



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INTRODUCTION

- Ductal adenocarcinoma (DAC) is relatively rare but is the second most common subtype of prostate cancer (Pca), first described in 1967, after acinar adenocarcinoma (AAC) which accounts for over 90% of all primary PCas.
- DAC is also known as 'endometrioid' or 'papillary' carcinoma.
- We systematically interrogated the literature in order to clarify the epidemiology, diagnosis, management, progression and survival of DAC. (PROSPERO registration CRD42019122205)

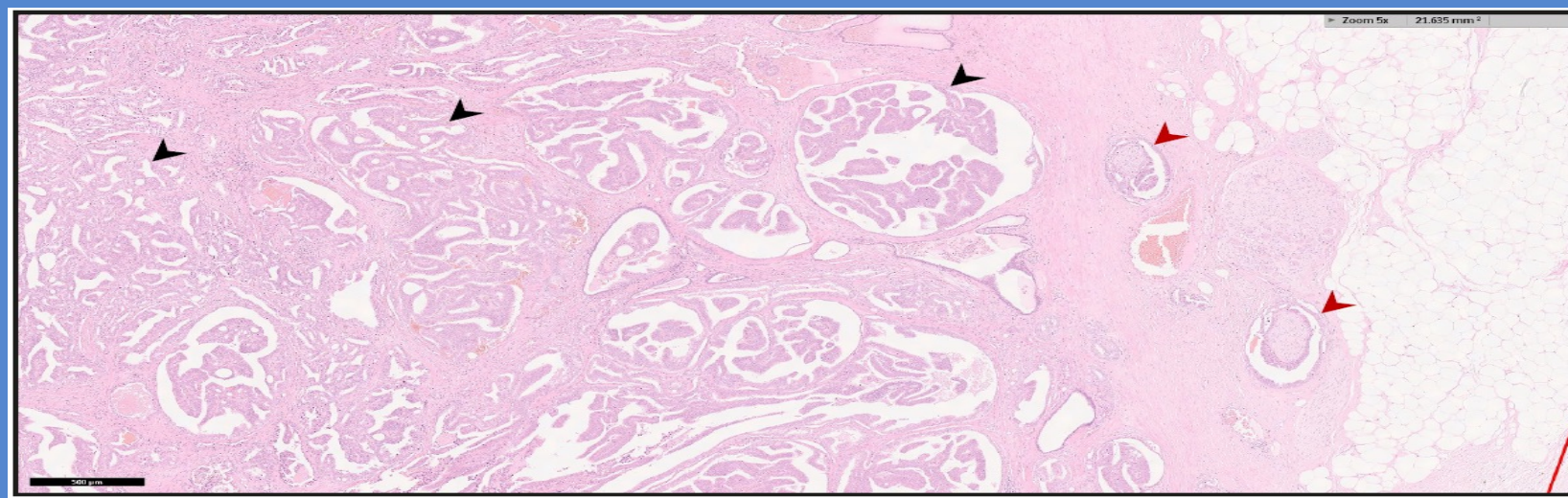


Figure 1. DAC histology characterised by distinctive tall columnar, pseudostratified epithelium with papillary, cribriform, glandular or solid architecture.

METHODS

- We conducted a literature search of the following databases: Pubmed, Scopus, Web of Science, Ovid Embase and Cochrane Library.
- Search terms (stems): 'prostate ductal adenocarcinoma' OR 'prostate endometrioid carcinoma' and variations of each.
- Followed PRISMA criteria.
- Included: all reports of cases of DAC.
- Excluded: review or meta-analysis, editorial comment, letter, book chapter or cancer biology.
- 106 studies eligible for inclusion:
 - 2,426,877 cases of PCa, of which 5,269 are DAC.
 - 50 case series and 56 case reports.

RESULTS

- Incidence** of DAC is 0.19% on meta-analysis (range 0.08-13.4%).
- Mean **PSA** at presentation is 10.1 mcg/L on meta-analysis (16.2 mcg/L for AAC -Packiam, 2015).
- 15% of DAC presents as **T3 stage** on meta-analysis (9% of AAC).

RESULTS continued

- DAC has a poor **prognosis** compared to AAC on meta-analysis:
 - DAC CSS @ 5yrs = 80%, AAC CSS @ 5yrs = 96%.

Study	PCa subtype	No. cases	BCR @5 yrs (%)	CSS @5 yrs (%)	OS @5 yrs (%)	Mets post radical tx @5 yrs (%)
Wu et al, 2017	DAC	511		370 (72.0)		
	AAC	3303		3071 (93.0)		
Khan et al, 2017	DAC	139	82 (59.0)			18 (13.0)
	AAC	7499	3525 (47.0)			525 (7.0)
Packiam et al, 2015	DAC	1328			996 (75.0)	
	AAC	751,635			681919 (77.0)	
Tarjan et al, 2012	DAC	13	8 (62.0)	12 (92.0)	12 (92.0)	3 (23.0)
	AAC	97	11 (11.0)	97 (100.0)	94 (97.0)	0 (0.0)
Meeks et al, 2012	DAC	435		383 (88.0)	318 (73.0)	
	AAC	442,169		424482 (96.0)	367000 (83.0)	
Total	DAC		90/152 (59.2%)	765/959 (79.8%)	1326/1776 (74.7%)	21/152 (13.82%)
	AAC		3536/7596 (46.6%)	427650/445569 (96.0%)	1049013/1193901 (87.9%)	525/7596 (6.91%)
	RR (CI)		1.27 (1.11-1.45)	0.83 (0.81-0.86)	0.85 (0.83-0.87)	2.00 (1.33-3.00)
	p value		0.004	<0.0001	<0.0001	0.0008

Table 1. Relative risk of biochemical relapse (BCR), cancer specific survival (CSS) and overall survival (OS) with ductal adenocarcinoma (DAC) vs acinar adenocarcinoma (AAC). Better outcomes in GREEN, worse outcomes in RED.

- First treatments** for localised DAC are typically radical prostatectomy (RP) and radiotherapy (RT).

Study	Outcome measure	Endpoint (yrs)	Total cases	RP (%)	RT (%)
Khan et al, 2017	BCR	5	RP-93, RT-18	55 (59.0)	3 (16.0)
Igdem et al, 2010		5	RP-16, RT-14	3 (19.0)	2 (14.0)
Leibovici et al, 2009	CSS	N/A	RP-76, RT-32	8.1 yrs	5.1 yrs
Igdem et al, 2010		5	RP-16, RT-14	14 (88.0)	13 (93.0)
Francavilla et al, 2018	OS	5	RP-21, RT-23	18 (86.0)	15 (65.0)
Khan et al, 2017		5	RP-93, RT-18	4 (95.5)	3 (17.0)
Igdem et al, 2010		5	RP-16, RT-14	13 (81.0)	9 (64.0)

Table 2. Biochemical relapse (BCR), cancer specific survival (CSS) and overall survival (OS) for men with DAC according to mode of radical treatment: radical prostatectomy (RP) or radical radiotherapy (RT). Better outcomes in GREEN, worse outcomes in RED.

CONCLUSIONS

- There is currently only low-level evidence (case studies) documenting DAC.
- DAC presents with a lower PSA and at a more advanced stage, compared to AAC.
- DAC has a worse prognosis, compared to AAC.
- There is currently no clinical consensus regarding the optimal treatment modality for DAC, although potential for peritoneal dissemination may caution against radical prostatectomy.
- Further research into the genetic composition, evolution, diagnosis and treatment of DAC is warranted.

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