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Research Article

**DIFFERENTIAL DIAGNOSIS AND MANAGEMENT OF  
SPONTANEOUS RETROPERITONEAL HEMATOMA****Khaled Muteb Almansori, Mohammed Abdullah Alzahrani , Wael Ali Hadaidi , Sultan Daifallah Alshalwi, Faisal Abdulrahman Alasmry, Waleed Nami Alrubaie, Abdulwhab Saad Almalki****Article Received:** November 2020**Accepted:** December 2020**Published:** January 2021**Abstract:**

*Spontaneous retropharyngeal hematoma is an infrequent but potentially life-threatening complication of anterior cervical spine surgeries. Challenging situations might be confronted and catastrophic events or even deaths still occurred occasionally during the treatment. A literature search and systemic review was carried out on Databases including MEDLINE (PubMed), EMBASE, Cochrane Database of Systematic Reviews and Database of Abstracts of Reviews search was performed for studies published up to 2020. Studies were selected depending related evidence to our concerned topic Spontaneous Retroperitoneal Hematoma*

*Spontaneous retroperitoneal hemorrhage is an unusual ailment and tough to determine, provided its resemblance in the medical signs with various other pathologic entities. Delay in medical diagnosis may be deadly for the patient. The uncertainty index ought to be high in individuals confessed to the casualty division with unexpected flank discomfort with a couple of hours of progression, anaemia and haemodynamic instability.*

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## INTRODUCTION:

Retropharyngeal hematoma occurs rarely. It is located just in front of the cervical spine. Many circumstances can lead to its development. A trauma and/or anticoagulants are often key factors. The assessment must be made extremely carefully as such a hematoma can induce an airway compromise [1], [2].

Although spontaneous retroperitoneal hemorrhage (SRH) is commonly associated with Lenk's triplet (flank pain, signs and symptoms of internal hemorrhage, and upper and lower quadrant stomach swelling to palpation- costovertebral angle tenderness), among the most normal symptoms and signs recognized are stomach pains (67%), hematuria (40%), and shock (26.5%) [3]. It is typically discovered integwell-recognized however unusual and troublesome to detect problem, specified as bleeding in the retroperitoneal space without connected injury or iatrogenic change. It has been related to hematologic health problem, malignities, renal angiomyoliporated with hypertension (33- 50%) and atherosclerosis (80- 87%) [4]. People with spontaneous retroperitoneal blood loss existing with a range of symptoms and signs consisting of stomachache, hip and leading thigh soreness, back pain, and hypotension [6]. In one empirical accomplice research study, the nonspecific nature of symptoms and signs caused misdiagnosis in 10.1% of the cases [6]. The individual in this circumstance displayed numerous of the abovementioned symptoms and problems. Etiologies along with the exact systems resulting in SRH are uncertain in a lot of the reported situations. Tumors, particularly renal cell carcinoma and angiomyolipoma, are the most usual root cause of SRH, taking place in 57- 73% of situations [4]. The overall frequency of SRH as a problem of tumors, nevertheless, is reduced. In kidney cell carcinoma, it happens in just 0.3- 1.4% of situations, although the occurrence is notably greater in angiomyolipoma, taking place in 13- 100% of situations, relying on tumor size [5]. Adrenal myelolipoma, pheochromocytoma, and adrenal hemangiomas have also been reported to trigger SRH.

Contrasted to various other sites of blood loss, retroperitoneal bleeding can be very challenging to presume, due to the very little specific signs that are related to this problem, while its diagnosis and treatment additionally present problems. Thus, its diagnosis and management are usually triggered by the hemodynamic concession in an individual without various other apparent site of blood loss.

Spontaneous retroperitoneal bleeding is an unusual but possibly serious occurrence that is most typically seen in individuals on anticoagulation treatment, those with bleeding conditions, and those on hemodialysis. And might be deadly for the patient if not identified in time. There need to be a high uncertainty index, considering that there are various other ailments which may have the very same symptomatology. Because of it in this Review, we discuss the available differential diagnosis and management approaches.

## METHODOLOGY:

A literature search and systemic review was carried out on Databases including MEDLINE (PubMed), EMBASE, Cochrane Database of Systematic Reviews and Database of Abstracts of Reviews search was performed for studies published up to 2020. Studies were selected depending related evidence to our concerned topic Spontaneous Retroperitoneal Hematoma, using the terms 'Retroperitoneal Hematoma, 'bleeding', 'hemorrhage, 'diagnosis, 'management, All studies were included about in English language with human subject.

## DISCUSSION:

### • SPONTANEOUS RETROPERITONAL HEMATOMA

Wunderlich disorder, also referred to as SRH and spontaneous subcapsular hematoma, was first explained in 1700 by Bonet and was more considerably explained by Wunderlich in 1856 [7]. Although SRH is typically associated with Lenk's triad (acute flank pain, signs of internal blood loss, and inflammation to palpation), the most common symptoms and signs explained are abdominal pain (67%), hematuria (40%), and shock (26.5%) [7], [8]. SRH is an infrequent issue of several entities (Table 1). Tumors, particularly kidney cell cancer and angiomyolipoma, are one of the most typical root causes of SRH, taking place in 57% to 73% of cases [7], [8]. The overall frequency of SRH as a problem of tumors, nonetheless, is low. In renal cell cancer, it happens in only 0.3% to 1.4% of cases, although the occurrence is much higher in angiomyolipoma, happening in 13% to 100% of instances, relying on tumor size [9]. Adrenal myelolipoma, pheochromocytoma, and adrenal hemangiomas have additionally been reported to create SRH.

Polyarteritis nodosa and non-neoplastic renal pathology such as nephritis are additionally prevalent root causes of SRH, with much fewer common reasons including Behçet disease, renal artery

aneurysm rupture, cystic median necrosis, blood dyscrasias, and arteriovenous malformations [7], [10].

Among the least usual root causes of SRH is SAM. First named segmental mediolytic arteritis (SAM) by Slavin and Gonzalez-Vitale in 1979, SAM was discovered in 3 different instances of hemorrhage, 2 of which involved a retroperitoneal component. The pathologic development, which impacted branches of the gastric, remarkable mesenteric, and substandard mesenteric arteries, was not constant with known

vasculitides or cystic medial necrosis [11]. Rather, it was characterized by focal vacuolization of the media and internal elastic lamina entailing just sections of the arterial circumference. Revealing no preference for vascular branch factors as is discovered in other vasculitides, these sores often had concomitant deposition of loosened fibrous tissue, resulting in focal arterial weakening, aneurysm, exploring hemorrhage, and rupture. Inflammation, eosinophilic infiltrates, and immunoglobulin complicateds were not consistently located [12].

**Table 1. Causes of Spontaneous Retroperitoneal Hemorrhage<sup>[19-12]</sup>.**

<b>Vascular</b> Abdominal aortic aneurysm rupture Renal artery rupture Arteriovenous malformation Cystic medial necrosis Segmental arterial mediolysis(SAM)	<b>Non-neoplastic Renal Pathology</b> Nephritis Cystic rupture Renal calculi Renal infarct
<b>Rheumatologic</b> Polyarteritis nodosa Behçet syndrome	<b>Coagulopathy Infectious Disease</b> Renal tuberculosis Renal cortical abscess
<b>Renal Tumors</b> Renal cell carcinoma Angiomyolipoma Transitional cell carcinoma	<b>Adrenal Tumors</b> Myelolipoma Pheochromocytoma Hemangioma

#### • PATHOPHYSIOLOGY

Retroperitoneal bleeding is a clinical emergency that is often complicated to diagnose because of its rareness and the nonspecific symptoms with which it provides. It can be triggered by numerous reasons, such as trauma, malignancy, iatrogenic manipulation, burst stomach aneurysm, and coagulopathy; nevertheless, spontaneous retroperitoneal blood loss is an one-of-a-kind entity with couple of situations reported in the literary works <sup>[13]</sup>. Many released instances include individuals receiving anticoagulants, while several of them were receiving antiplatelets at the same time, while just a tiny minority of the individuals with spontaneous retroperitoneal bleeding was obtaining only antiplatelet medications <sup>[13]</sup>, <sup>[14]</sup>. The pathophysiological system of spontaneous retroperitoneal bleeding is not quite clear;

nevertheless, there are research studies recommending that scattered occult vasculopathy and atherosclerosis of the little vessels in the retroperitoneal space might result in burst of the most friable vessels amongst them <sup>[15]</sup>. On the other hand, some suggest that although the name "spontaneous" implies no trauma, maybe that minor unacknowledged injury, such as in intense coughing or throwing up, or minor trauma in sporting activities could lead to a powerful muscle pressure that might progress to retroperitoneal bleeding <sup>[15]</sup>. In our situation, biopsies from the kidney after nephrectomy disclosed the presence of tiny and macroscopic vascular modifications which could have resulted in the growth of spontaneous bleeding, especially in this patient that can have been inclined to bleeding spontaneously as a result of antiplatelet treatment.

#### **Box 1. Retroperitoneal organs**

Suprarenal glands (aka the adrenal glands)  
Aorta/IVC  
Duodenum (second and third segments [some also include the fourth segment] )  
Pancreas (only head, neck, and body are retroperitoneal. The tail is intraperitoneal)  
Ureters  
Colon (only the ascending and descending colons, as transverse and sigmoid retain mesocolon)  
Kidneys  
Esophagus  
Rectum

### • DIFFERENTIAL DIAGNOSIS

The medical diagnosis of RH can be incredibly difficult as a result of the absence of pathognomonic indications or signs. Offering signs may include microscopic hematuria (30%), hypertension and flank or stomach pain [16]. Most of the times, the pain is nonspecific and difficult to situate. The absence of signs and symptoms, existence of distress in the lack of peritoneal indications, leukocytes and various other acute stomach searching for during surgical treatment might lead to misdiagnosis and, in some cases, devastating results. The medical diagnosis of a stomach vascular emergency is often not made till the patient comes to be hemodynamically unsteady, which makes the diagnosis of hypovolemic shock much more obvious.

Throughout the differential medical diagnoses of RH, tumors and retroperitoneal cystic masses must be taken into consideration. Retroperitoneal tumors are rare, standing for in between 0.3% and 0.8% of all tumors [17]. Amongst these tumors, liposarcoma is one of the most typical retroperitoneal deadly tumors. Other tumors to take into consideration are fibrous histiocytomas, schwannomas, and paragangliomas [17]. Retroperitoneal cystic sores might be neoplastic or non-neoplastic. There is a wide array of neoplastic sores, consisting of cystic lymphangioma, mucinous cystadenoma and cystic teratoma, to name a few. Non-neoplastic sores consist of pancreatic pseudocyst, lymphocele, and urinoma.

The medical diagnosis is evasive and can simulate other disorders. Spontaneous RPHs usually do not present with a Cullen's sign or Grey-Turner's indicator. Retroperitoneal blood can likewise dissect right into the perineum or groin and cause scrotal hematomas, inguinal masses, or scrotal/inguinal pain, as observed in this situation. It has additionally been reported that retroperitoneal blood might irritate the psoas muscular tissue and produce an iliopsoas sign such as is periodically seen in appendicitis. Neurologic signs could be existing as a result of compression of the femoral, obturator, and lateral femoral cutaneous nerves. Nonspecific signs and symptoms could be the only hint to intraabdominal pathology and just recently executed treatments have to be thought about.

In cases in which the medical diagnosis of RPH is presumed, the conclusive diagnosis can be made by CT check. Multidetector Computed tomography (MDCT) plays a primary duty as a result of its

capability to identify, with high sensitivity and specificity, the existence and source of hematomas right into the retroperitoneal area, considerably affecting the subsequent management [18].

X-ray and ultrasound exam are frequently the very first imaging examination for individuals with moderate to modest signs and symptoms as pain in the epigastric region, hips, and back. Their function is currently constrained to the preliminary exemption of G.I. system perforation and for recognition of various other extra typical causes of acute abdomen, specifically if related to intra-peritoneal beginning or of the urogenital system. Ultrasound (US) is a useful complement since it can show totally free liquid in the peritoneal tooth cavity and offer a sign to the diagnosis. Nevertheless, US and simple movie of the abdominal areas supply inadequate and typically non-specific analysis information.

CT scan is normally done in individuals with medication resistant ache symptoms or in case of uncertain ultrasound diagnosis; more often, a CT scan is done as the initial examination to promptly obtain the right medical diagnosis of any intra and/or retroperitoneal illness in individuals with severe signs, aggravating of hemodynamic problems, or medical suspicion of a stomach bleeding origin. Therefore, CT plays a primary function in the detection of retroperitoneal bleeding, its area, size, and source, with high sensitivity and uniqueness [18]. Some writers have highlighted the importance of a deep expertise of the makeup of the retroperitoneal fascial planes [19].

On CT-angiography imaging, hemorrhage is defined as totally free extravasation of comparison media that continue and enlarge on postponed pictures and pseudoaneurysm as a round or ovoid dental caries, interacting with a damaged vessel wall, that shows wash out on postponed phase. Arteriovenous fistula is defined as early, synchronised vessel improvement of both artery and vein. From a restorative viewpoint, arterial energetic blood loss sores can be securely treated with angiographic embolization. On the various other way, exclusion of a significant arterial supply in the context of a hematoma at first deals with the patient toward a nonoperative management, with research laboratory and important follow-up. Existence of periodic blood loss can be meant, when CT-angiography does not demonstrate any kind of resource of energetic bleeding and the hematoma raises in dimension.



**Figure1.** Computed tomography scan demonstrating the retroperitoneal hematoma tracking inferiorly into the pelvis.

#### • TREATMENT METHODS OF SRH

Treatment of spontaneous retroperitoneal bleeding might differ. To our knowledge, there are no details standards to reliably recommend when a traditional strategy might not be enough, and endovascular or medical management needs to be tried.

The restorative management of RPH generally depend on two factors, the hemodynamic condition of the patient and the reason for bleeding. If hemodynamic instability initiates measure quantity substitute by blood products, colloid and crystalloid. As soon as the patient is supported, sufficient analysis study for figuring out the etiology of the condition, based generally on imaging examinations, particularly CT, will certainly be done. CT scan is the principal technique of medical diagnosis [8]. By contrast, if hemodynamic security of the patient is not achieved or instability happens at any moment throughout the diagnostic process, urgent surgical exploration and the resultant therapy will certainly be called for.

When it comes to spontaneous retroperitoneal blood loss in a hemodynamically stable individual that got on anticoagulants, a conservative approach with modification of the coagulation abnormalities, supportive procedures, and volume resuscitation could be sufficient for the management of this condition [20]. Interventional treatment in the case of retroperitoneal blood loss includes intra-arterial embolization in case energetic blood loss is identified on angiography, and open surgical treatment is typically booked for the cases where interventional radiology is unsuccessful or inaccessible or if the patient establishes abdominal area disorder [21]. [20]. Hernández *et al.* reported the management of

retroperitoneal hemorrhage with laparoscopic approach in 4 individuals, and it is wrapped up that laparoscopic exploration offers an alternative to open surgical treatment, although the treatment can be made complex additional to the fibrosis [22].

#### Endovascular treatment in retroperitoneal haemorrhage

There is an expanding pattern in using endovascular strategies as an option to open surgical procedure in the treatment of retroperitoneal haemorrhage. The main alternatives are careful intra-arterial embolisation or stent-grafts to stop the bleeding. Intra-arterial embolisation is being made use of with raising frequency in situations where the angiogram reveals energetic bleeding sites [23]. In this series by Isokangas *et al.*, four individuals were operated on before embolisation, yet surgical procedure fell short to control the bleeding [23]. Embolisation making use of a combination of agents, such as coils, gelatin and/or polyvinyl alcohol, has been utilized. Coils are possibly the safest, however Isokangas *et al.* commented that proximal coiling of the blood loss artery might not suffice in the retroperitoneum, where there is an abundant network of collateral arteries and new arterial paths might establish after obliteration of the lumbar arteries [24]. It is necessary to put embolic agents both proximally and distally to the bleeding site to stop re-bleeding. Although blood loss was eliminated or markedly decreased after embolisation in 8 individuals, five individuals established stomach compartment syndrome requiring surgical or radiological decompression procedures [23].

The indications for embolisation are based upon the haemodynamic security of the patient and the degree of blood loss. Panetta *et al.* stated that haemodynamic

instability regardless of four or even more devices of blood transfusion within 24 h, or 6 or even more devices of blood transfusion within 48 h is a sign for urgent examination and endovascular therapy [25]. Embolisation needs to be done whenever arterial extravasation is seen. Sharafuddin *et al.* revealed that discerning arterial embolisation succeeded in a series of five individuals, although rebleeding took place in one individual [26]. Pathi *et al.* received a collection of 4 individuals that embolisation achieved success in all individuals, and the bleeding was multi-focal in one patient [27].

#### **Open surgery in retroperitoneal haemorrhage**

There was once a view that all retroperitoneal haemorrhage should be treated cautiously, as it was believed that open surgery might disturb the tamponade effects of the retroperitoneum. Open surgical procedure is suggested if the patient continues to be unpredictable despite appropriate liquid and blood product resuscitation, or if interventional radiology is not successful or not available. These individuals are certainly seriously ill. It is essential for the coagulopathy to be totally dealt with prior to surgery. The primary intention for surgical procedure is to regulate all actively bleeding factors, and the additional objective is to get rid of the huge haematoma. The retroperitoneum might need to be packed and re-explored at 24- 48 h [28]. An additional indication for open surgical procedure is when the patient develops stomach area syndrome as a result of the huge retroperitoneal haematoma [29]. In careful instances, image-guided water drainage of haematoma might be a choice to open surgery to release intra-abdominal pressure [23]. If unattended, individuals may create indications of increased intra-abdominal pressure with damaged breathing, cardio and kidney function.

#### **Lapascopic minimally invasive surgery in retroperitoneal haemorrhage**

Nontraumatic retroperitoneal hemorrhage usually recommends underlying renal pathology. In most situations, the etiology is kidney cell carcinoma or angiomyolipoma. Much fewer common reasons include autoimmune, vascular or infectious etiologies [2]. Definitive management is shown for kidney hemorrhage calling for transfusion for hemodynamic instability. After the acute episode has fixed even more therapy is recommended to stop recurrent blood loss and deal with the etiology of kidney bleeding [31]. The introduction of laparoscopic partial and extreme nephrectomy uses a practical, minimally intrusive surgical choice. Nevertheless, academic problems exist complying with perinephric hematoma

resolution because considerable fibrosis might make dissection difficult.

Laparoscopic analysis gives a minimally invasive surgical choice [30]. In the research they utilized a transperitoneal strategy to identify much better the bordering frameworks involved by perinephric fibrosis. This technique contrasts with the retroperitoneal technique of Castle and Herrell, who made use of a retroperitoneal laparoscopic technique to administer a stressful Page kidney [30]. As a result of the enhanced technical difficulty connected with perirenal bonds the laparoscopic approach must just be tried by doctors comfortable with laparoscopic strategies. Based upon previous studies the laparoscopic method may be related to lowered discomfort and recovery time compared to those in individuals undertaking open surgical expedition and nephrectomy [31]. Nonetheless, since no open nephrectomies were done in this patient populace during the research study period, no direct comparison could be made. Current improvements in instrumentation and technique permit one to do laparoscopic partial nephrectomy for kidney lesions at desirable places [32]. There is evidence that renal parenchymal conservation in individuals with a normal contralateral kidney is associated with better lifestyle compared to radical nephrectomy [33]. These methods may be related to manage kidney sores after spontaneous hemorrhage but they might be practically difficult because of extensive adhesion formation. Consequently, the doctor must have a reduced limit for conversion to laparoscopic radical nephrectomy.

#### **CONCLUSION:**

Spontaneous retroperitoneal haemorrhage is an unusual ailment and tough to determine, provided its resemblance in the medical signs with various other pathologic entities. Delay in medical diagnosis may be deadly for the patient. The uncertainty index ought to be high in individuals confessed to the casualty division with unexpected flank discomfort with a couple of hours of progression, anaemia and haemodynamic instability. The abdominopelvic computed tomography has confirmed to be the very best imaging technique to detect it. Motivate recognition is a basic consider developing certain management. Surgery, as the gold standard, reveals outright effectiveness as conclusive treatment and provides a good prognosis.

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