Idiopathic spontaneous intraperitoneal hemorrhage; Review

Khalid khadawardi

Abstract:

While we describe this rare event, we discuss its etiology, and the diagnostic, therapeutic and prognostic implications of this disease including a review of the relevant literature. We conducted a search through electronic databases; PubMed, and EMBASE, for studies published in English language thought instant to 2017. Studies discussing the Idiopathic spontaneous intraperitoneal hemorrhage. Intraperitoneal haemorrhage is a collection of blood in the abdominal cavity. Common causes consist of abdominal trauma, ectopic maternity, malignancy of solid organs (renal, hepatic or pancreatic), aneurysmal rupture or inflammatory erosive process (pancreatitis). In addition to these, it may be idiopathic, also referred to as abdominal apoplexy or changed by a newer term - Idiopathic Spontaneous Intraperitoneal Haemorrhage (ISIH). Spontaneous Hemoperitoneum should be considered in the differential diagnosis of patients that have acute abdomen with falling hematocrit and with signs and symptoms of hypovolemia with associated positive history of a predisposing problem to prevent a dangerous diagnostic hold-up and culmination right into a catastrophe.

Introduction:

Idiopathic Spontaneous Intraperitoneal Haemorrhage (ISIH) is described as the existence of blood in the peritoneal cavity that is not connected with traumas. The phenomenon can be

idiopathic or pertaining to spontaneous rupture of either recognized or unidentified pathology [1].The reason for nontraumatic spontaneous hemoperitoneum could be identified as vascular, hematological, hepatic, splenic, gynecological, and inflammatory or coagulation problem or cryptogenic illness [2].Idiopathic Spontaneous Intraperitoneal Hemorrhage (ISIH) is an unusual and often life threatening condition, also traditionally referred to as abdominal apoplexy [3].It should be considered in any type of patient with atypical abdominal pain, nausea, throwing up and hemodynamic instability [4], [5].Pre-operative diagnosis is rarely feasible. Immediate exploratory laparotomy continues to be the treatment of option. Massive haemoperitoneum presents as an acute surgical emergency. It is usually related to trauma, ruptured aortic aneurysm, ectopic pregnancy, or bleeding from an ovarian follicle or hepatic tumpur and, much less commonly, with rupture of an aneurysm of a visceral artery.

While we describe this rare event, we discuss its etiology, and the diagnostic, therapeutic and prognostic implications of this disease including a review of the relevant literature.

Methodology:

We conducted a search through electronic databases; PubMed, and EMBASE, for studies published in English language thought instant to 2017. Studies discussing the Idiopathic spontaneous intraperitoneal hemorrhage were included whether were reviews or control studies. We excluded case reports. Moreover, references of included studies were scanned for more relevant articles.

Discussion:

Idiopathic spontaneous intraperionealhemorrhage (ISIH) was initially reported by Barber in 1909 and was later on termed "Abdominal apoplexy" by Green and Powers in 1931. Its real occurrence is unknown [7].The different reasons for spontaneous hemoperitoneum are categorized into complying with based on source of bleeding [6], [8], [9].

- **Hepatic cause**

Spontaneous hepatic blood loss is mainly as a result of rupture of underlying hypervascular tumor. It could result from rupture of benign hepatic adenoma which typically occurs in young women getting long-term oral contraceptive therapy or in pregnancy or in males with exogenous androgenic steroids ingestion. Hemangioma and Focal nodular hyperplasia are additionally usual benign liver lesions. Nevertheless, their tear is an occasional event mainly pertaining to enhanced intravascular volume that takes place while pregnant [8], [9].Rupture of a hepatocellular cancer or primary angiomyosarcoma of the liver are deadly lesions recognized to trigger spontaneous hemoperitoneum. Rupture of a metastatic lesion from primary hatred in colon, lung, kidney, testis and choriocharcinoma has likewise been reported to cause SH.

Both primary and metastatic tumors can be highly vascular and necrotic and for that reason prone to intraperitoneal rupture. Factors that add to bleeding could consist of increased intravascular pressure additional to tumour embolus, creating intra-hepatic venous obstruction with shunting of blood, and a hyperaemic liver circulation triggered by distance of vessels to metastatic nodules or primary tumours. Nonetheless, straight pressure of the tumor versus the capsular surface of the liver seems the most probable explanation. Extensive replacement of liver tissue by tumour along with poor nutrition could decrease coagulation elements and promote haemorrhage. Systemic

chemotherapy could also lead to substantial tumour necrosis as well as thrombocytopenia. A sudden boost in intra-abdominal pressure arising from sneezing, coughing or throwing up could trigger rupture of tumours that are necrotic or hyper-vascular. Small trauma or iatrogenic damages by needle biopsy or liver palpation ought to be dismissed prior to the rupture and hemoperitoneumare classified as spontaneous [9], [10], [11], [12].

There is some debate concerning the treatment of option in this circumstance. Blood loss is frequently difficult to regulate, and the mortality rate is high. The readily available therapy choices are merely palliative unless resection is feasible. Surgical treatment includes hepatic wedge resection or lobectomy, ligation of the blood loss resource and hepatic artery ligation. Numerous writers support an aggressive surgical intervention with resection of the affected liver wattle whenever possible. Unfortunately, only a few patients are fit for this treatment, owing to the existence of cirrhosis or considerable replacement of liver tissue by tumor. Hepatic artery ligation might quit the blood loss, yet it is connected with a high risk of death from liver failing.

Transarterial embolization (TAE), in which a blend of gelfoam and mitomycin C is infused in the feeding artery of the tumor, could attain great hemostasis. Intratumoural injection of absolute alcohol has also been utilized to deal with haemoperitoneum secondary to nontraumatic liver rupture, based on the capacity of this material to ruin HCC under ultrasonographic control and to quit the blood loss in oesophageal varices and peptic abscess. Hemorrhaging stops owing to a procedure of tissue dehydration and fixation, followed by thrombosis of the vessel. It may be helpful when resection or hepatic ligation is either not feasible or ineffective, and when transcatheterembolisation is not offered. Recent growths include percutaneous radiofrequency ablation (RFA) of the tumor. The recorded survival of patients with spontaneous rupture of hepatomas is incredibly inadequate. The result is figured out by the phase of both the neoplastic

and the underlying liver condition, the rapidity of diagnosis, the degree of haemorrhage and the kind of therapy. Infiltrative condition of the liver like amyloidosis and gaucher's illness could likewise result in SH. There have additionally been particular case records pointing out gall bladder necrosis and spontaneous bacterial peritonitis as the pathology behind SH.

- **Splenic causes**

Postponed splenic rupture could occur complying with blunt abdominal trauma. Spontaneous splenic rupture mostly occurs in instances of significant splenomegaly because of underlying hematologic malignancies (acute leukemia or lymphoma) or infectious reasons such as mononucleosis or Cytomegalovirus, malaria, EBV, Bartonellahenselae, AIDS in young patients. Couple of instances are reported pointing out spontaneous tear of hypervasculartumors like hemangiopericytoma leading to SH. Wandering spleen is an uncommon condition characterized by boosted splenic mobility as a result of ligament laxity and its torsion can bring about spontaneous splenic tear [13].Clinical presentation in such instances consists of acute abdominal and shoulder discomfort due to diaphragmatic inflammation. Diagnosis at CT is suggested by the recognition of a grossly uncommon spleen with perisplenichemorrhage or a clot in the organ. Therapy could be conservative, or surgical through complete or partial splenectomy, or transcatheter embolization, depending upon the underlying condition [8], [14].

- **Gastrointerstinal causes**

Peptic perforation or colonic perforation could result in spontaneous hemoperitoneum and be related to fecal/ billiary peritonitis. Angiodysplasia of the colon could be the reason for spontaneous intra peritoneal blood loss. Such instances often need immediate exploration to treat the cause [15], [16].Only 2 instances of hemoperitoneum arising from colonic diverticulum have

been reported, one because of hypertension and various other because of spontaneous blood loss of serosal vessel of colonic diverticulum. Invagination and diverticulectomy are 2 means to deal with diverticula while maintaining the blood supply of the bowel. Invagination of bowel lessens bowel leakage and can be quickly performed laparoscopically with suture technique [16].

- **Gynecological causes**

Rupture of an ectopic maternity or rupture of an ovarian cyst are the most common causes of spontaneous hemoperitoneum in women of childbearing age. Ectopic pregnancy is a potentially life-threatening condition that has to be taken into consideration in every female of reproductive age with abdominal or pelvic discomfort, normally beginning with determining the serum HCG and performing pelvic sonography. In the emergency setting, CT might be done in these patients as a result of today serious signs and symptoms and a falsely negative urine pregnancy test. Ectopic pregnancy commonly occurs in the fallopian tube and provides as a ring-enhancing adnexal cystic mass surrounded by hemoperitoneum. Emergency laparotomy is required in this problem [6], [8].Rupture of an ovarian cyst must be thought in young females offering with pelvic pain and adverse serum - HCG.Ectopic endometrial tissue or metastatic illness like gestational trophoblastic tumor could also lead to spontaneous hemorrhage.Retrograde menstrual cycle is one condition where in USG/CT findings of hemoperitoneum may not reveal any affiliated pathology. SH throughout maternity is unusual yet has high morbidity and death rate.Thepre personnel medical diagnosis is normally placental abruption which impersonates SH [17].The etiology of SH in pregnancy orpost partum duration is inadequately understood. Besides spontaneous rupture of tumors connected with pregnanacy, as reviewed formerly, spontaneous rupture of utero- ovarian vessel remains an opportunity [18].

Utero-ovarian vessel dilatation due to increase physiological demand of maternity, together with an abrupt rise in venous pressure resulting from contraction related to labour, coughing, defecation or coitus could raise propensity for vessel tear. Other adding elements include tortuous nature, lack of shutoffs and repeated distention of this vessel while pregnant. Volume replacement and prompt CeasarianSection is very necessary in such instances to conserve both the mother and the infant.

- **Vascular causes**

Vascular reasons are separated into arterial and venous causes.Arterial causes of SH included aneurysm, pseudo aneurysm, mycotic aneurysm and arterial dissection. CT is typically carried out in patients with known abdominal aortic aneurysm (AAA) providing with abdominal pain to leave out rupture or to determine other causes for the patient's signs. On unenhanced CT images, results connected with increased danger of tear consist of raising diameter of the aneurysm (> 5 centimeters), focal suspension in circumferential wall calcifications, and presence of a crescent-shaped area of high depletion in the mural thrombus or in the aneurysmal wall, called the active attenuating crescent indicator Rupture is generally linked with a big retroperitoneal hematoma adjacent to the aneurysm. Few patients with intraperitoneal rupture of AAA endure to make it to the healthcare facility and hardly ever upto a CT check. Management includes quantity resuscitation complied with by surgical improvement in the kind of resection of aneurysm, arterial reconstructuion.

In patients with a concomitant coagulopathic condition, it is crucial to figure out the cause of the retroperitoneal hematoma due to the fact that a ruptured AAA needs timely therapy by surgery or endovascular intervention, whereas surgery is typically contraindicated in situations of coagulopathic hemorrhage [19].Less typical vascular reasons for spontaneous abdominal

hemorrhage include rupture of a splanchnic artery aneurysm and disintegration of a vessel by an adjacent neoplastic or inflammatory condition (e.g., pancreatitis). Though splenic and renal arteries are most commonly included, spontaneous tear of left gastro epiploic artery, hepatic artery, gastric artery, mesenteric artery have been stated.

- **Anticoagulation**

Abdominal hemorrhage because of anticoagulation or bleeding diatheses (e.g., hepatic failing, hemophilia, idiopathic thrombocytopenic purpura and systemic lupus erythematosus) generally entails multiple sites, and specifically the body wall muscle areas, such as the rectus sheath or the iliopsoas muscular tissue. Abdominal viscera are less typically the sites of coagulopathic hemorrhage, however instances of burst liver, spleen and perirenal and intramural bowel hematomas have been pointed out. When contrast-enhanced CT discovers coagulopathy-associated energetic extravasation, this is more often venous than arterial, normally not requiring surgery or embolization. Treatment is mainly conventional and based on withholding of anticoagulant medicines. Dengue fever linked anticoagulation has been reported to cause SH. Dengue fever could bring about bleeding indications like gum bleeding, bleeding right into internal body organs and bleeding right into serosal dental caries with transformed or typical abdomen. Therefore, routine tracking of crucial signs, hemoglobin, hematocrit, platelet matters, serology of dengue is essential when hemoperitoneum is related to high temperature [20].

SH could take place in superwarfarin(Brodifacoum) rodenticide exposure (which is primarily unintentional) that creates severe bleeding problems that might last for month [21], [22].There have been records of hemoperitoneum resulting from GB tear in patient on anticoagulation, spontaneous rupture of spleen in patient on heparin. The most common hematological disorder that may cause SH is hemophilia. Congenital element X deficiency has additionally been reported

to trigger SH after rupture of luteal cyst. Hemodialysis reliant population goes to a certain risk for SH. These patients have inadequately functioning platelets that incline them to spontaneous blood loss. Additionally they get substantial quantities of heparin at each hemodialysis which raise vulnerability to bleed [23].

- **Management**

Therapy of spontaneous intraperitoneal bleeding rotates around resuscitation and reconstruction of circulating volume. This has traditionally been adhered to by surgical modification. Imaging in patient with SH has 2 primary functions, (1) medical diagnosis of blood in peritoneal cavity, (2) to recognize underlying cause.In the hemodynamically unstable patient, Focused Assessment with Sonography for Trauma(FAST) assessment may be useful to detect intraabdominal hemorrhage. It also has a big duty In medical diagnosis of SH secondary to gynaec causes. Nevertheless, CT scan stands for the most essential imaging technique. The use of intra venous contrast is presently recommended if the patient is stable enough for the hold-up related to providing oral comparison. CT angiography of vessels has verified useful as a screening device using percentages of contrast to elucidate websites of active blood loss. MR is corresponding to CT and serves in confirming the medical diagnosis and in special situations like pregnancy [8] [9].

Table 1.Causes of spontaneous hemoperitoneum.

1.Hepatic	**2.Splenic**
Rupture of hepatic adenoma/ hepatic adenomatosis/ hemangioma/ FNH	Post trauma – delayed splenic rupture Infectious mononucleosis
Rupture of Hepatocellular carcinoma/ primary angiosarcoma	Cytomegalo virus infection,AIDS, malaria, EBV, bartonella
Rupture of metastatic lesion(colon, lung, Renal Cell Carcinoma, testicular, wilms, choriocarcinoma)	Hematological malignancy associated splenomegaly (leukemia/ lymphoma)
Benign infiltrative disease of liver,Amyloidosis	Tumor – hemangiopericytoma, Primary/secondary angiosarcoma
Liver rupture (HELLP syndrome)	Splenic cyst/ abscess

Cirrhosis with portal hypertension and intraperitonial rupture of varices Spontaneous bacterial peritonitis leading to hemoperitoneum	Splenic infarcts(infective endocarditis) Torsion of wandering splenic pedicle Torsion of speen PHT and splenomegaly with liver cirrhosis Sickle cell anemia Infiltrative diseases (Amyloidosos, Gaucher's disease)
3.Renal Angiomyolipoma Renal Cell Carcinoma Coagulopathy Vasculitis – PAN, Wegeners	**4.Adrenal** Severe stress Sepsis Anticoagulation
5.Vascular *Arterial :* Rupture of arteriosclerotic/ mycotic/ congenital aneurysm Splanchnic arterial aneurysm/ mesenteric/ retroperitoneal vessel rupture Erosion of vessel by neoplastic/ inflammatory disorder(pancreatitis/ choloecystitis / appendicitis / Meckel's diverticulitis *Venous:* Spontaneous intra abdominalvariceal rupture Rupture of uterine veins Rupture of rectus hematoma into peritoneum	**6.Anticoagulation** Hemophilia Idiopathic Thrombocytopenic Purpura Hepatic failure Anticoagulant therapy(Warfarin/ Heparin) SLE/PAN Blood dyscrasias Myeloprolifarative disorder(leukemia/ lymphoma) Dengue Disseminated Intravascular Coagulation Severe celiac diseasewithvit K malabsorbtion Rodenticide poisoning Brodifacoum (superwarfarin) Congenital factor X deficiency
7.Gynecological Rupture of ovarian cyst Rupture of ectopic pregnancy Retrograde menstruation Ectopic endometrial tissue Metastatic disease like gestational trophoblastic tumour Pregnancy/Post partum spontaneous hemorrhage(rupture of uterine vessel) Hemorrhagic corpus leuteum cyst torsion HELLP syndrome Rupture of uterine leomyoma	**8.Gastrointestinal** Diverticulum of sigmoid colon Colonic/ intestinal / peptic perforation Angiodysplasia /AV malformation of the gut **9.Other** CAPD (continuous ambulatory peritoneal dialysis) Hemodialysis dependent **10. Idiopathic**

Conclusion:

Intraperitoneal haemorrhage is a collection of blood in the abdominal cavity. Common causes consist of abdominal trauma, ectopic maternity, malignancy of solid organs (renal, hepatic or pancreatic), aneurysmal rupture or inflammatory erosive process (pancreatitis). In addition to

these, it may be idiopathic, also referred to as abdominal apoplexy or changed by a newer term - Idiopathic Spontaneous Intraperitoneal Haemorrhage (ISIH). Spontaneous Hemoperitoneum should be considered in the differential diagnosis of patients that have acute abdomen with falling hematocrit and with signs and symptoms of hypovolemia with associated positive history of a predisposing problem to prevent a dangerous diagnostic hold-up and culmination right into a catastrophe.

Reference:

1. Liu YH, Ma HX, Ji B, Cao DB (2012) Spontaneous hemoperitoneum from hepatic metastatic trophoblastic tumor. World J Gastroenterol 18: 4237-4240.
2. Dedouit F, Piercecchi-Marti MD, Leonetti G, Rouge D, Telmon N (2012) Unexpected natural death secondary to intra-abdominal bleeding: Report of one idiopathic spontaneous intraperitoneal hemorrhage case. Forensic Sci Int 214: e43-e46.
3. Skouras Ch, Lalountas MA, Triantafyllou A, Angelidou S, Ballas KD (2011) Idiopathic spontaneous haemoperitoneum due to a ruptured middle colic artery aneurysm. Int J Surg Case Rep 2: 163-165.
4. Dvorak A, Gazzaniga A. Dissecting aneurysm of the gastrodeudenal artery; anatomic basis for the syndrome of abdominal apoplexy. Ann Surg 1969; 169:425-8.
5. Harbour LN, Koch MS, Louis TH, Fulmer JM, Guileyardo JM. Abdominal apoplexy: two unusual cases of hemoperitoneum. Proc (Bayl Univ Med Cent) 2012; 25:16-9.
6. Lucy bc,et all, spontaneous hemoperitoneum, a bloody mess, emergency radiology, june 2007, vol 14, issue 2, page 65-75.
7. Jadav M, DucheineY,Brief D, Carter L, McWhite T, Hardy J,; Abdominal Apoplexy: A Case Study of the Spontaneous Rupture of the Gastroepiploic artery.
8. Brian c lucy,et all, spontaneous hemoperitoneum- causes and significance: Current problem in diagnostic radiology vol- 34, issue 5, page 182-195 sept 2005.
9. Alessandro Furlan, SacedFalcliram and Michal P FedeeleSpontaneous abdominal hemorrage; Casues, CT Findings, and Clinical Implication: Citation – Americal Journal of Roentgenology, 2009; 193:1077-1087.
10. LX Zhu, GS Wang, SI Fan –spontaneous rupture of hepatocellular carcinoma-British Journal of Surgery , 1996,V.83,N.5,P.602-607 8. LX Zhu, XP Geng, SI Fan -spontaneous rupture of hepatocellular carcinoma and vascular injuries-Archives of Surgery, 2001, V.136,N.6,P.682-687.

11. FugiiM,Miyake H, TakamuraK,Tashiro S; management of spontaneous ruptureof hepatocellular carcinoma-Nihon-GekaGakkai-Zasshi; 2004APR;105(4) 292-5.PMID-15112491.
12. Li WH,ChenkEC,KwokPC,Cheung MT-Survival after transarterial embolization for spontaneous ruptured Hepatocelluar carcinoma, J Hepaticobilliary PancreaticSURG,2009;16,508-12.
13. Sucandy I, Akamal YM, Gabrielsen JD. Spontaneous massive hemoperitoneum: a potentially Life Threatening Presentation Of Wandering Spleen. North American Journal of medical science 2011:3:99-102.
14. Picozzi Stefano, Carlo Maria, MasinoMauri, Luca camignani. A unique case of hemperitoneum; spontaneous rupture of splenic hemangioparicytoma; International Journal of Emergency Medicine 2011 4:13 doi 10:1186/1865-1380-4-13.
15. Karim Ibn MajdoubHassani, Ali Bounckar, Jean Manuel Grun. Spontaneous rupture of right gastro epiploic artery: unusual cause of acute abdomen and shock; World Journal Of Emergency Surgery 2009/4:24: DOI 10:1186/1749-1922-4-24.
16. Kye BH, kim HJ, yoonJh, Pack DC, Lec SJ. Spontaneous hemoperitoneum caused by a Diverticulum of the sigmoid colon; International journal of Med sci 2011;8(6): 467-469 DOI 10.7151/ijms.8.467
17. Subedi s, Banerjee B, Spontaneous hemoperitoneum masquerading Placental Abruptiion: a case report. NJOG 2012, Jul-Dec 7(2): 50-51.
18. Jennifer lu Gao, BHSc, Karine, Lortie, MD, Sukhbirsonysing MD. Laparoscopic Internal IliacArtery Ligation For Post Partum Spontaneous hemoperitoneum; JOAC Dec 2010, 1172-1175.
19. D Y H Yap, T P S Yip, S L Lui and W K Lo. Ruptured Abdominal Aortic Aneurysm as a cause of spontaneous hemoperitoneum in a patient on Peritoneal Dialysis international,31(5),600- 602,2011
20. NKT Chandrashekar, et all, Spontaneoushemoperitoneum in dengue fever with normal coagulation profile: JGlob Infect dis. 2013 Jan-Mar; 5(1): 29-30. Doi 10.4103/0974-777X. 107172
21. Austin T Nelson, BS, Joshna D. Hartzell, MD, Kenneth Moe, MD, Steven J Durning MD. Ingestion of superwarfarin leading to coagulopathy: A case report and review of literature: MedGenMed 2006; 8(4): 41. Published online 2006 nov 28.
22. Jeri Patoka, Georg Petroionu, Kamilkula, Toxic Potential of SpuperwarfarinBrodifacoum; Mil Medical Science lett (VojZdrav Listy0 2013, vol 82(1) p 32-38, iSSN 0372-7025
23. G. Stephnnace, Afred L, GeergeJR,William J Stone Hemoperitoneum – Red Flag in CAPV; journal of international society for peritoneal dialysis; Peric Dial Int. January/March 1985/ vol 5 no 1 page 42-44
24. Back, Jong Bum, Seon, SeungHorn;Won, Dal Yeon, Bae, Keum, Kim, IK Young. Spontaneous hemoperitoneumin Patients takingAnticoagulants; JKoreanSurg Soc.2010 jun 07 ; 78(6) 369-375.